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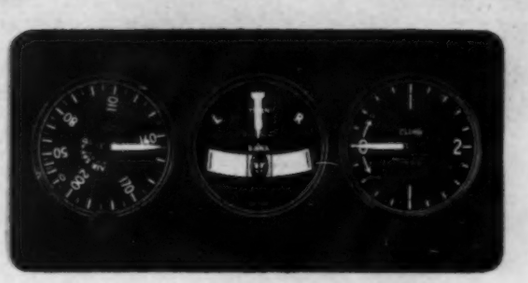

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Southern Flight

The Complete Monthly Digest of Aeronautics in The South and Southwest

MARCH, 1937 VOL. VII. NO. 3

Contents:

Special Features

MAPS FROM ON HIGH, by Joe McMillon 6
AMERICA BY AIR, by Werner Roenneke 8
BENDIX SURVEY, by Howard S. Welch 10
AIR TRACK, by C. E. Planck 11
BUREAU REORGANIZED 12
WNAA IN THE SOUTHWEST, by Frances Brown 13

Regular Features

JUST AMONG OURSELVES—Editorial Comment 4
NEW EQUIPMENT 14
NEWS OF THE MONTH IN REVIEW 16
PORTS OF CALL 18
CLASSIFIED AND DIRECTORY ADVERTISING 25

The Cover:

Two views of the new Taylorcraft, which carries two people side-by-side at a cruising speed of 80 mph with a range of 230 miles. Gas consumption is at the rate of 3 gallons per hour. This new entry into the light plane field features dual wheel controls, upholstered cabin and luggage allowance of 56 pounds.

(Photos by Air Activities, Houston)

★ ★ ★ ★ ★ Just Among Ourselves ★ ★ ★ ★ ★

IN this issue you will find a report on the shake-up in the Bureau of Air Commerce. Following such a major shift in executive personnel, of one thing we can be certain—that there will be a corresponding revision in Bureau policies.

Fred D. Fagg, Jr., wartime pilot, founder of the Air Law Institute and recognized expert on aeronautical law, takes over the controls as Director in place of Eugene Vidal, resigned. Fagg's assistant is Major R. W. "Shorty" Schroeder, former chief of the air line inspection service. Col. J. Carroll Cone has been assigned to a study mission in Europe, Rex Martin to similar duties in Latin America.

On the face of the shake-up, the Fagg-Schroeder combination has every chance of being a harmonious one; and we can hope that internal strife, so visible in the outgoing regime, will be erased in spite of the fact that the political complexion higher up in the intricate Department of Commerce menage remains status quo.

We wish Mr. Vidal well; for we believe him to be a man of sincere purpose who was not to blame for all the follies and mistakes that have been heaped upon his sore back—mismanagement and errors that might better have been attributed to reduced appropriations and a putrid system of political juggling and traffic in jobs together with interference into Bureau affairs by political chiropractors among the higher-ups whose conceptions about assistance and regulation of civil aeronautics are comparable to those we would expect from Swanee Taylor.

Is not the irony of the situation contained in the fact that all of us agree in our desire for a Bureau of Air Commerce, or an Air Ministry of Civil Aeronautics (call it what you will), directed and operated by honest, intelligent, highly trained, experienced men who would have freedom of decision and isolation from political pressure—well paid men, who, upon dispatching their jobs with efficiency and service, need never fear for their jobs but hold them 'til the day of retirement? And the present system won't permit it.

A FEW of the states are not subject to state interference in aeronautics. In other states there are Commissions, Inspectors, Aviation Divisions of State Road Departments, Directors and other titles by the dozen. Some take the gasoline tax money, others take part and some return all of the tax collected at the time of the gasoline sale. The result is a hodge-podge of practices and theories as to how a state should govern, supervise or control civil aviation within its borders.

There has been a lot of agitation for a uniform law which protagonists hope will be adopted by all 48 states. Along with several other organizations, the National Association of State Aviation Officials are most active in the crusade for uniform state legislation and regulation. With all due respect to that body of diligent men, we cannot for the life of us understand why anyone would want state regulation of civil aeronautics. Why duplicate the work of the Bureau of Air Commerce and why have 48 different state legislatures passing laws that create unnecessary jobs and add on to the tax burden which in the end must be paid by the owner, operator and pilot?

Some few states have, through the medium of inspired leadership and experienced counsel, established aviation departments that keep their fingers out of the Federal government's job and interest themselves primarily with the construction of facilities for airmen, air marking, removal of hazards, public education, general promotion work and prosecution of unlicensed or dangerous flying practices.

Once the various state legislatures get their hands into the aviation picture by passing laws, the facts will bear out that there's no end to the ridiculous bills that are born in every fork of the creek. Take for example what has been happening in Texas—a state that has been relatively free from aviation legislation. During a recent committee hearing at the state Capitol a rugged old veteran from Chickenswitch Center got up and stated

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that he "Didn't know much about this airplane business but figgered that them flying machines which go scootin' through the air like a cannon ball at fifty miles an hour ought to be regulated, cuss 'em!" The old patriarch was ready to vote yea on any bill introduced, no matter the source. Had any of the five proposed bills become law, aviation in Texas would have suffered immeasurably. Luckily, pilots and operators rallied to the cause and dealt the death blow in the nick of time.

Beware of state legislation. Beware of uniform, highly-touted laws supposedly written by experts. Over-regulation is as threatening and as dangerous as under-regulation, and state regulation, duplicating Bureau duties, is not only useless but costly.

COLLIER'S, the National Weekly, sends us an advance copy of the edition of March 20, containing a super-intelligent article on the subject "Is It Safe to Fly?" by W. B. Courtney, their aviation editor. Since there has been so many misconceptions printed about air safety of late, and since so many of us are on the defensive, we strongly recommend that you place this comprehensive piece on your current list of general interest reading. Here is a portion worth quoting:

"Since air line scheduled passenger transportation under regulation began in 1926, up to the end of 1936 there have been on the domestic and foreign air lines of the United States 199 passenger deaths out of a total of almost 5,000,000 carried. In 1935 there were on the Great Lakes and high seas 800 wrecks, taking 355 lives, to American merchant vessels, which carried 411,825 passengers. In the same year, American scheduled commercial airplanes carried more than twice as many passengers—860,761—and had 62 accidents, 9 of them fatal to a total of 15 passengers and 18 crew personnel.

"You cannot blame the air traffic men for pointing out that each year lately automobiles have been killing upwards of 35,000 and that you don't quit driving your car on that account. That casualties in connection with railroad operations, according to government figures, were nearly 5,000 killed and more than 16,000 injured in 1935 (of course only 18 of these dead were passengers, out of a total of nearly 500 million carried) and that you never think of these matters when you step to the window to buy a railroad ticket. That for every mysterious plane accident, such as the one in Arkansas a year ago and the one near Cheyenne just before that, you can read of ships that put to sea and are never heard of again; that the appalling toll of the Titanic, the Vestris, the Morro Castle, does not keep you from going to sea. That in the week of the Martin Johnson accident in California, railroads, street cars, buses and steamships were taking a far greater toll the world around."

ANOTHER important lay publication also treats of air safety in a recent issue. Fortune, thorough-going, esoteric monthly, splits the blame between the Bureau and the operators. Noting that "the Government never blames itself for an accident." Fortune analyzes the series of disastrous airplane crashes of which we are all familiar and declares that "the basic unsafety" in the air equation today is an existing unbalance "between the flying equipment of the operators, which is the best in the world, and that of the government, which is mediocre."

In what are described as lay recommendations, Fortune asks that pay of pilots be increased, that more extensive courses of pilot training be undertaken and that airplane operators themselves establish "an institution for radio research, jointly financed and dedicated to aeronautical radio devices, whether for ships or for the ground." It further suggests that all existing radio ranges be expanded and be made more technically perfect and that more money be allocated for modern navigational aids for every section of the country.

Fortune's observations and recommendations are reiterations of what our trade publications have been clamoring for over a period of years—ever since the short-sighted economy program of the Roosevelt administration (only $3,200,000 for new equipment in four years) went into effect.

Fortune errs in placing the blame on the "economy program" of the Bureau of Air Commerce instead of at the doors of Congress, whence comes the cash to do the job. However, it is highly significant and timely that our better lay publications have interested themselves at last in the necessity for immediate action on the part of the government to clean its own house insofar as its dealings with aviation are concerned. We need all the help we can muster.

LAST year at the National Air Races most everybody thought that foreign competition in the scintillating success of Michel Detroyat would stimulate the development of competitive equipment, particularly engines, here in America. Thus far there is no visible indication of the predicted result. Perhaps we were all too hopeful.

At Cleveland next September we can expect an unprecedented influx of foreign competition and a corresponding decrease in the number of American pilots. Many of our own boys will have neither the money nor the incentive to fly against subsidized foreign equipment.

We would be glad to see Howard Hughes' racer go against anything in the field, but one does not expect him to enter. In the first place he is not a professional racing pilot nor would the patriotic feeling, even if present, justify the risk attendant to loaning his ship.

If unlimited foreign competition is permitted to enter, we are giving our races a colorful international aspect, but at the cost of our own professional racing pilots. Their back-yard designs, which have always been developed at their own expense, just can't stand the gaff.

Foreign competition must be limited or our manufacturers or government must get to work on equipment that will enable our pilots to compete. They simply can't do it on their own hook as they have in the years gone by.

LABOR troubles have come to the industry. The recent uprising at Douglas, which appears to have been precipitated by professional labor agitators, is cause enough for all manufacturers to feel apprehensive of similar situations arising in their own plants. The larger manufacturers are affected more pertinently because close relationships which promote understanding and harmony between employer and employee is difficult to achieve in instances where payrolls run upwards to the thousands.

Labor racketeers, organizers and agitators who are finding their long hoped for opportunity in the general labor unrest now sweeping the nation, lose no time to gain power and are attempting to tie up the aviation industry with other labor groups. Here is the source of the discord that renders peaceful solution to the benefit of all more difficult.

On the other hand there are a few sincere and capable labor leaders within the industry who enjoy the confidence of their fellow workmen and the executive personnel within the companies. Into these hands must the problems and difficulties of labor be placed for peaceful solution. Fortunately, the situation at Douglas is taking this course and should establish an important precedent in the aviation manufacturing industry.

MAPS FROM ON HIGH

Improved technique and new equipment brings aerial photography alongside other major branches of the industry as new projects swell dollar volume.

JOE McMILLON

AERIAL mapping of the present day has become an exact science and an art almost wholly unrelated to the original use of a camera for merely taking pictures from the air. Development of technique and equipment has been so successfully advanced that this science has proved an enormous aid to the work of civil engineering in producing precise mosaic and contour maps of large areas in limited time and at greatly reduced cost.

A great many uses are being found for oblique work particularly in geological surveys in the oil and mineral regions of the South and Southwest.

To indicate the magnitude of the work being done it is pertinent to point out that Fairchild Aerial Surveys, Inc., alone has mapped a total of 144,000,000 acres in the past three years or eight per cent of the area of the United States. A great portion of this has been done in the southwest for the Soil Conservation Service of the U. S. Department of Agriculture. Most of the work completed has been delivered in the form of precise mosaic maps having a scale of two inches to the mile although in some sections only the delivery of contact prints and enlargements was involved. In an aerial survey of the Boulder Dam region an extremely accurate contour map at a scale of one inch to 1,000 feet with twenty foot contours was delivered.

The process of arriving at the finished map is not a simple one and involves many steps not appreciated by the average person. From start to finish the work must be done methodically and with precision as any false step along the way naturally invalidates any following procedure. To give a proper idea of how it is done it is best to sketch briefly through some of the various steps.

When an order comes to map a certain section of terrain the first move is to obtain all possible maps and data available and study the area closely to learn the nature of the job and the methods best suited to carry through the project. When this is done a survey of weather data for the region is made to determine the amount of time required for the task in view of the number of clear days that will be available in a given length of time. Only days that are practically free from clouds or haze are suitable for the work and since most contracts have a time limit it is sometimes necessary to send more than one crew into the field to complete a survey within the time set. When all this has been done, the job has been properly "sized up" and it is time to make detailed plans for the actual mapping work.

A great deal of time and consideration goes into producing flight maps which are actually work sheets detailing the procedure to be followed in mapping the area and giving the necessary information prior to working the area. On these maps the area is carefully zoned on the basis of ground elevations, and flight strips are laid out with the varying altitudes at which the plane must be flown in order to arrive at the proper scale of the finished map. In remote areas it is also frequently necessary for ground surveying parties to go into the district and establish what is known as control points. This may be done at any time during the survey and consists of determining the exact latitude and longitude of certain important positions on the survey so that the completed map will be supplied with known base lines. When a contour map is to be made that will show variations in altitude of the terrain, surveying parties also determine the elevation of control points. Of course, when mapping territory is suitably provided with section lines and highways, the control work is unnecessary because these landmarks have been surveyed in the past, and, when included in the map, act as base lines themselves.

Before the work is actually commenced adequate supplies of all necessary equipment is shipped to the operation base and these usually include aerial film, oxygen, and sometimes even gasoline and oil when work is done in very remote districts.

The operating equipment for aerial mapping consists essentially of a suitable airplane capable of operating at high altitudes, cameras and auxiliary operating equipment, navigation devices for keeping the airplane on the proper course, and oxygen tanks and dispensing devices. An example of aerial mapping equipment is the flag ship of a fleet of six Fairchild airplanes operated by chief pilot F. E. Secor and chief cameraman H. D. Treadway. The airplane is a FC2W2 cabin monoplane equipped with a Wasp CS1 engine having 450 horsepower. The airplane has been modified for the specialized service by having all cabin upholstery and wood work and other such unnecessary items removed to reduce the weight. Furthermore the streamlining has been improved to such an extent that 5,000 feet of additional altitude has been added and the speed stepped up. Maximum altitude of the airplane with equipment is about 26,500 feet.

NAVIGATION of a mapping airplane requires much greater accuracy than that for ordinary cross country flying, hence a great deal of specialized navigation equipment has been fitted to the airplane to meet the rigid requirements. When flying a strip, the airplane

cannot be permitted to diverge more than two and one-half degrees at any time and the accuracy for the length of the course must be held within one-half a degree. Strips usually average about fifty to eighty miles in length but in one case a run 250 miles in length has been made. Such accuracy is rather remarkable in view of the fact that it is generally conceded most pilots cannot fly within less than five degrees of a given course by compass.

The only compass carried is a Pioneer straightaway type mounted in gimbals to keep it level and with all compensation bars removed. Since the compass is merely used to aid in remaining on a given course after the airplane is properly headed the reading is not important, and removing the compensation renders the instrument more sensitive. Maintaining the proper altitude is important in order to keep the map to the proper scale; a Paulin accurate altimeter is carried on the panel and is used in conjunction with a Luckey Computer to allow for changes of temperature and barometric pressure. Of special interest on the flag ship is an innovation developed by pilot Secor to aid in making greatest use of section lines and landmarks to maintain the proper course in flying a strip. Fastened to each wing about ten feet out from the cabin windows are wooden rods about eight feet in length which extend out in front of the leading edge. These rods have been graduated in such a manner that the pilot can sight from a mark on the window glass along a section line and determine the angle the airplane is cutting the section line by noting what graduation on the rod is intersected by the line of sight. In addition a shorter steel rod is placed across the nose of the airplane and graduated for the same purpose.

These special devices are necessary due to the fact that an airplane can be steered much more accurately by sighting on landmarks then by depending on a compass or other panel instrument which are subject to all sorts of variations due to magnetism, rolling of the airplane, etc. True it is that the proper heading to make good a desired course over the ground must be determined by trial to overcome wind drift, but when this is done the airplane is best kept on the course by lining objects ahead of the airplane to provide a line to steer by and by checking on section lines and the like as already mentioned.

A new device known as the Solar Navigator has been developed by Leon T. Eliel, vice-president in charge of sales and engineering for the Fairchild concern. This is an adaption of the well known sun compass with special means for compensation for drift, etc. Although still in the experimental stages this instrument is expected to be so accurate that even pilots with limited experience can map with a minimum accuracy of one-fourth of a degree, an accuracy equalled by practically no mapping pilots.

Although many types of cameras are used for a variety of mapping work there are two cameras which are used most extensively. One is the familiar Fairchild K3-B single lens camera having a focal length of eight and one-quarter inches and taking a seven by nine inch picture. The other is Fairchild's special four couple camera having four lenses and an equivalent focal length of five and one-half inches. This camera makes a finished picture measuring ten by ten inches. All four lenses are set twenty-seven degrees from vertical and after transformation the four exposures are properly projected into one picture. The result is a map section that has far less displacement and one hundred per cent definition over the entire face of the picture, something not possible with any other type of camera arrangement. A single lens picture, for instance, has considerable displacement and poor definition at extreme corners of the exposure.

The cameras are set in a special mounting fitted in the floor of the cabin. The mounting permits the camera to be leveled to compensate for any rolling or fore and aft angle of the airplane. In addition the camera may be turned to allow for crabbing of the airplane to overcome wind drift. Fitted to the camera is an electric device known as an intervalometer which automatically trips the shutter and rolls the film in place at certain intervals of time set by the operator after noting the speed over the ground. However, due to changing conditions caused by flying the course alternately in different directions, the operator cannot depend on the intervalometer but must continually note the speed of the airplane and change the time interval to suit the conditions.

OXYGEN tanks are fitted with suitable valves and with tubes through which the oxygen is inhaled for high altitude work. A "hospital mixture" consisting of ninety-five per cent oxygen and five per cent carbon dioxide is carried in the tanks and used by the operators at altitudes above 15,000 feet. It is pertinent to mention that use of oxygen has not been a problem in impairing the health of the mapping crews of the Fairchild concern to date, although it is frequently mentioned by many as being dangerous. Some slight difficulty has been experienced with fillings coming loose from the teeth of the operators but this is largely due to the contraction of silver fillings as result of the extreme coldness of the oxygen as it expands when passing out of the breathing tube. Fur lined clothing is worn the year around for

(Continued on Page 26)

Interior of the Fairchild mapping airplane showing the four couple camera being operated by H. D. Treadway, chief cameraman for Fairchild Aerial Surveys, Inc. F. E. Secor, chief pilot, is at the controls. On the left wall of the cabin is the intervalometer for controlling the camera and the oxygen apparatus. Maximum altitude of the airplane with equipment is about 26,500 feet.

America By Air

A renowned German aviation editor and lecturer tells about his first trip to America, by airplane across the continent and by dirigible back to Germany.

WERNER ROENNEKE

AS might be expected at the close of the eleventh Olympics, reservations on the dirigible "Hindenburg" en route to the United States were in great demand. As a result all places were taken far in advance. So when in the middle of August I received the friendly invitation of the American Airlines, one of the greatest in the United States, unfortunately it was impossible for me to make the trip on board the dirigible LZ 129. One of the beautiful Hapag steamers was my next choice, and on a sunny September day we set sail from Cuxhaven. The life of ease and comfort on board ship brought me not only much-needed rest but also leisure to prepare myself for my first visit to America.

Bathed in brilliant sunshine the famous Statue of Liberty greeted us before our entrance into the Hudson, and everyone was on deck to enjoy the imposing spectacle of the Manhattan skyline. On the pier thousands of people had gathered, anxiously awaiting beloved friends and relatives who had safely crossed the Atlantic on the trim German ship. At last I had arrived in the United States—an event I had looked forward to with great expectations.

For most of the passengers the journey was at an end, for its continuation by railway offered nothing out of the ordinary for them. My situation was vastly different, for to me the ocean voyage was nothing more than the overture to a magnificent pageant that was to unroll itself before my eyes. Cast in the role of a modern Ikarus, I was to behold the great region stretching from the Atlantic to the Pacific. On the whole my interest was absorbed far more by geographic and scientific observations than by the skyscrapers of New York. All my hopes and expectations for my American air trip were more than fulfilled; in fact, it was a thrilling, unforgettable experience. Three episodes comprised the trip: by steamer to New York, by aeroplane across the country, and by dirigible back to Germany.

Before starting on my flight to Los Angeles and San Francisco, I had the opportunity to observe the Sunday activities of the air-minded enthusiasts at Roosevelt Field on Long Island. Contrary to reports in European newspapers, here I learned that Americans manifested a surprising interest in flying. In the course of the afternoon not only did hundreds of men and women take short trips in the vicinity of New York, but also a great number of "sport-flyers" piloted their smart-looking machines out of the hangar for pleasant, leisurely flights. One could almost be envious of them!

Characteristic of American hospitality, an invitation was extended to me, too, for a most enjoyable flight over Long Island. Later a walk through the numerous hangars and repair shops surrounding Roosevelt Field proved very instructive.

After this introduction to American "sport-flying," I set forth on my intended journey. We took off from Newark, one of the most important of the eighteen airports situated close to New York. The first leg of the New York-Chicago non-stop flight was completed in a Douglas express plane of the latest design, DC-3, one of the bi-motored type (Wright Cyclone-Motor G-1,000 h. p. each) with a cruising speed of 300 km. per hour. The motors are equipped with efficient NACA cowlings and Hamilton controllable propellers.

The comfort of these remarkable planes was to me a distinct surprise. By day they accommodate twenty-one passengers; at night there are sleeping compartments for fourteen. The service available to the customer in American air travel is made complete by a pleasant young lady who serves on the regular staff as a stewardess. Her uni-

THE AUTHOR

During the past several years an increasing number of foreign visitors have flown our domestic airlines while surveying American aviation but few have written back and given us impressions of their visit. Here is an interesting and picturesque account of a round trip over the continent by a famous German airman who has studied aviation on every continent for the purpose of editorial and lecture work in Germany.

Translation from the German was done by Ahdel Reich and Emma Smallfield, who entertained the author during his visit in Texas. Photos of the Manhattan and San Francisco skylines are by the author.

form is simple and attractive. She tries to anticipate the wishes of the passengers, but for her services she never accepts a tip, contrary to the prevailing American custom. Besides a complete menu of three daily meals served by this obliging young lady, the travelers enjoy conversation, cigarettes, drinks—in fact, every effort is put forth to make the trip as pleasant as possible.

ON the flight from New York to Chicago the topography appeared to be comparatively level from an altitude of 3000 m. Outstanding are the immeasurably long and perfectly straight auto highways that traverse the country. Before reaching Chicago we flew over a large part of Lake Erie, saw the great buildings of Detroit near the outlet of Lake St. Clair, and viewed majestic Lake Michigan, enlivened by countless boats. Then at a height of 1200 m. an unforgettable picture appeared below: the truly American metropolis, Chicago, the second largest city in the United States. We slowly descended to the Municipal Airport, located west of the city and rightfully known as the aviation center of the United States. In addition Chicago enjoys the most extensive air traffic with Canada and has virtually become the mecca of air travel in all North America.

The excessive heat, which continued during my entire stay in the United States, made me appreciate doubly my artificially cooled room at the Bismarck Hotel in Chicago, just as the noisy city streets again made we aware of the advantages of peaceful travel in the air.

St. Louis was our first stop on the flight from Chicago to Fort Worth, Texas, the latter situated on the main route of the American Airlines, namely, the "Southern Transcontinental Route." On this leg of the journey we changed to a single-motored ten-passenger Vultee express plane (with air-cooled 9-cylinder Wright Cyclone-Motor-775 h. p.) Scenically, the trip to St. Louis offered nothing outstanding. The Lambert Airport is quite a distance northwest of the city. While in St. Louis I sought pleasant relief from the continued heat in an air-cooled theatre. And here, too, for the first time the great number of Negroes in the population drew my attention.

As we continued our journey with brief stops in Tulsa and Oklahoma City, we noticed that the further south we traveled the more sparsely was the country settled. Numerous gullies covered with underbrush dotted the endless landscape, and only here and there was a house visible. How different from European countries! Here in America there would be abundant space for many more million people.

In the exceptionally important airline center of Fort Worth, Texas, the heat became even more intense. The climatic influence of the Gulf of Mexico was apparent. In Fort Worth I had the opportunity to observe more closely the airport and its arrangement—administration building, radio station, repair shops, etc. The personnel of the American Airlines was most obliging and helpful in every way. Contrary to my expectations here in this city of 200,000 people situated off of the beaten track of metropolitan life, I met with such sincere and hearty hospitality that it will always be a delightful memory to me.

Fort Worth is approximately the central point on the route from New York to Los Angeles. An extensive day's flight from the Texas city brought us to Los Angeles, with intermediate stops at El Paso (almost touching the Mexican border), Tucson and Phoenix, Arizona. This great distance of 2042 km. was covered between 10 A. M. and 5:30 P. M. in seven hours and forty-five minutes flying time—a marvelous accomplishment for both the Douglas plane and the pilots.

The scenery between Fort Worth and Los Angeles is rich in contrasts. The atmospheric conditions (heavy cloud formations and rain) forced on the pilot an hour of blind flying, but then the skies became increasingly clear and the visibility good. Barren deserts and prairies stretched out for miles on either side. Majestically Texas' loftiest mountain, El Capitan, reared its head to a height of over 2000 m. Further on several volcanic-like peaks appeared on the desert landscape as if by magic, presenting an unusual panorama. Reaching skyward in the distance were visible the wild and threatening crests of the Rocky Mountains.

The short stops in El Paso, Tucson, and Phoenix enabled the interested spectator to observe the strong Spanish influence, especially in the architecture. In Phoenix the heat reached the high point of my entire American trip. Descending from an altitude of 3000 m. —we had flown over rather lofty mountains—down to the earth again, we became acutely aware of the overpowering heat. Every one hurried to the water-cooler that is always at hand in an airport.

After the take-off from Phoenix we again rose to a height of 3500 m.; beneath us lay cold, uninviting rocky cliffs and barren deserts. But scarcely twenty minutes later, after the Salton Sea had come into view, there was unfolded before our enchanted eyes the glorious orchards of California. Enormous fruit farms extended for miles across the land, interspersed with life-giving reservoirs and irrigation canals. In the glittering sunshine our metallic bird descended toward Los Angeles, which, broad and expansive, stretches from a range of hills to the Pacific Ocean. While leisurely gliding down, one seeks to drink in the loveliness and grandeur of this magnificent picture and never to lose its memory.

(Next month: The trip back across the continent and eastward crossing aboard the airship "Hindenburg.")

Bendix Survey

The world is spending a billion dollars for new airplanes with four-fifths of the equipment military; only the U. S. busy on civil craft.

HOWARD S. WELCH

ALMOST one billion dollars, four-fifths of it going for military craft, is being spent in 1937 for airplanes and equipment by fifty-six countries of the world, according to estimates announced by the Bendix Aviation Corporation.

The specific estimate for world expenditure for planes, navigational equipment, spare and replacement parts, is $911,000,000, and with the added cost of maintenance of air corps personnel and expenses for such non-recurring capital items as airports and airways, the total world investment this year for all new heavier-than-air expansion will amount to approximately $1,750,000,000.

The figures, constituting one of the most comprehensive and authoritative aeronautical surveys ever announced in any country and indicating that of the 62,349 planes already in use two-thirds are military craft, are announced in connection with a world-wide study which shows that manufacturers of engine accessories, wheels and brakes, radio equipment and similar items, will receive about 20 per cent of the total spent for aircraft, or approximately $200,000,000.

The estimates are based on known and estimated appropriations for 1936 and other years with consideration given such factors as national requirements, plans, condition and age of existing equipment, means and capacity to procure. Values in the many categories in which the totals are divided were reached by assigning arbitrary values to each class of plane, and adding 50 per cent for extra engines, parts and other flying equipment likely to be required. For Great Britain and the United States, however, the bases for estimate also included higher labor and material costs than elsewhere in the world.

Of the estimated $911,000,000 equipment purchases in 1937, the figures indicate that $813,000,000 will be spent for fighting planes and the balance will go for commercial transport and other civil craft. Military expenditures run all the way from around $500,000 in smaller countries to an average of $100,000,000 by each of the great powers of the world, European countries spending a total of $677,000,000 for both military and civil types. The great bulk of this total is provided by Great Britain, Russia, Germany, France and Italy, although smaller European countries, including some of the so-called buffer states, have relatively big air programs, particularly in the military fields. Asiatic countries, led by Japan, will spend $99,000,000; Canada and the United States, $112,000,000, and Latin America, $20,000,000.

All countries will build a total of 28,500 new planes, four-fifths of which will be military craft. Of the total new planes, 21,150 will be procured by the United States, Great Britain, Russia, France, Germany, Italy and Japan. More than two-thirds of the new American craft, however, will be civil or commercial planes, while almost the entire procurement of the other powers will be for military purposes. France is estimated to have the largest military air force in the world, an armada of 5,800 planes, although the United States is far ahead in all types of craft, having a total of 11,670 of which 2,600 are service planes. The ratio between civil and military craft in the United States is substantially more in the favor of civil planes than anywhere in the world. The United States is also tremendously in the lead in transport facilities, having 60,500 miles of airways and 500 planes in scheduled service, the same number as are being operated in Russia, if all types and seasonal schedules are considered.

A table based on the Bendix survey shows the following airplane strength of some of the leading nations of the world:

	Now Available:		1937 Construction:	
	Military	Civil	Military	Civil
Czechoslovakia	2,400	229	700	69
France	5,800	2,093	2,500	700
Germany	2,900	1,809	2,900	254
Great Britain	3,600	1,597	2,700	258
Italy	3,600	259	2,300	65
Japan	3,000	104	2,100	58
Poland	2,200	204	700	30
Rumania	2,200	51	400	8
U. S. S. R.	5,400	1,000	3,000	200
Yugoslavia	1,200	58	540	6
United States	2,600	9,071	1,200	2,640

It is worth while noting that the estimated 1937 world production of planes, namely 28,500 units, is about half the estimated number of craft in the entire world at the present time. This fact gives a graphic idea of the enormous pace the aircraft industry is attaining as compared to any production rate ever achieved in the past.

Of the 1937 production total about 6,300 planes would be produced in the United States if the American percentage of construction were to remain constant, although this is unlikely. During the past few years the United States has produced about 8½ per cent of the military equipment in the world, and better than 50 per cent of the civil aircraft. However, by reason of the very heavy building schedules undertaken by other manufacturing countries last year and to be extended into 1937, it seems probable that the United States share of world production will be reduced in terms of percentage during the next twelve months.

Air Track

Upwards of 1,000 safe instrument landings have been made with this, the latest system of blind approach which provides visual indication.

CHARLES E. PLANCK

THE Washington Institute of Technology has developed the familiar "curved beam" radio safe landing system to the point where it is now ready for commercial use on any airport.

The principles embodied in this system were originally worked out by an Aeronautics Research Division established by the Department of Commerce at the Bureau of Standards. A number of the radio scientists who developed the system at the Bureau have been at work in a laboratory at College Park Airport near Washington developing the system from its early experimental stages to the point where it is now practical for air transport. Three years of such development and improvement work have resulted in hundreds of successful landings "under the hood" and landings in fog conditions which interrupted scheduled flying. The first Air-Track apparatus is scheduled for installation about the first of May.

Three experimental installations of this curved beam type of landing system have been tested by Department of Commerce pilots, airline pilots and others. These are at College Park, Newark airport, and the municipal airport at Oakland, California. In all, upwards of 1,000 safe instrument landings have been made on these installations.

Six important improvements have been incorporated in the Air-Track. Important among these are the facts that the equipment has been so simplified and the design made so compact, that it is portable, making it possible to lead a pilot in to a safe landing from either end of any runway on the field; the radio signals, at first liable to deviation and instability, have been made reliable, and a monitoring system installed which indicates to the operator whether accurate signals are being broadcast; both the localizer and the glide path are quickly adjustable; and the equipment required in the plane has been made lighter and more efficient.

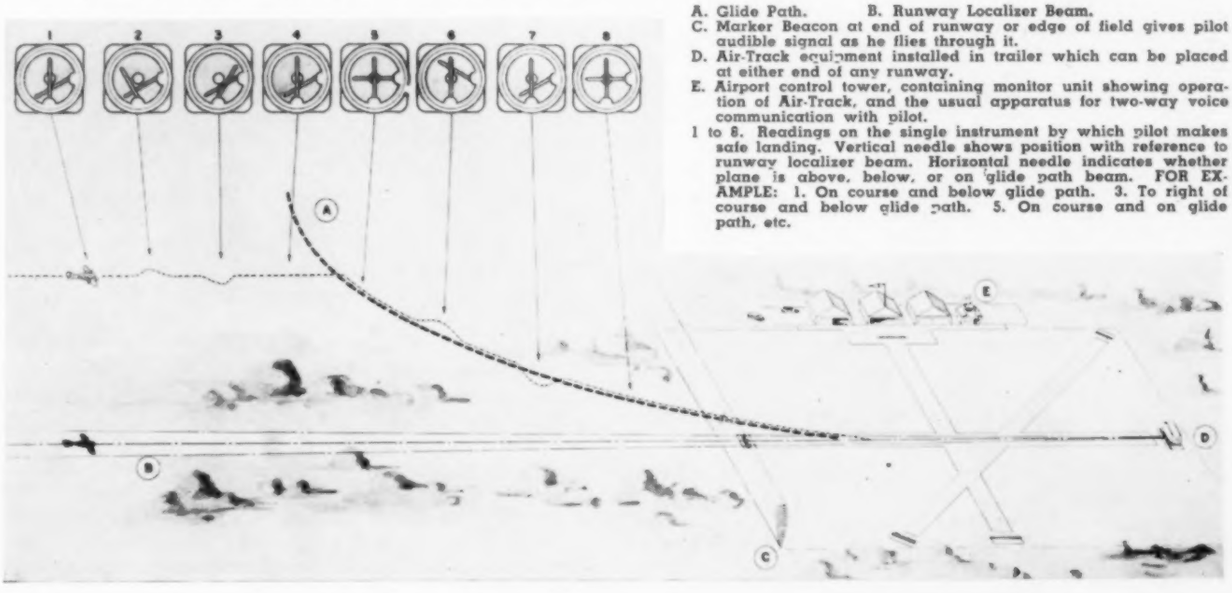
Briefly, the Air-Track system consists of two radio beams, a run-way localizer which lies down the center of the runway to be used, and a curved glide path which leads the plane down a sloping "track" to a gentle landing on the runway. A single "cross-pointer" instrument on the panel indicates the plane's position, the vertical needle pointing to the right or left if it veers from the center of the runway localized, and the horizontal needle rising or falling if the plane gets above or below the proper glide path.

At a distance of 10 or 15 miles from the airport, the pilot picks up the runway localizer through his regular communications receiver, over which he still receives voice communication, perhaps from the operator in the airport control tower. Lining up his flight along this localizer, which can be made as wide or as narrow as comfortable flying dictates, he approaches the curved beam down which he will glide to the runway. The receiver for this glide path is adjusted to the best gliding angle of that type of plane.

Having reached this point, the pilot flies his plane so that the two needles cross at right angles, and this indicates that he is approaching over the exact center of the runway and coming down at the proper, safe gliding angle.

At the edge of the field a marker beacon gives him a signal in his earphones which tells him he is crossing the edge of the field. At this time, he is approximately 20 to 30 feet above the runway, and the balance of the landing consists merely of leveling off and letting the plane settle.

Hundreds of times, planes with landing speeds as high as 75 miles an hour have been brought down to a spot on the field a few yards square. James L. Kinney, Department of Commerce pilot, as far back as 1933, took off from Washington under the hood, flew by instrument to Newark airport, and landed by instrument on the experimental installation of this system, on a day when



A. Glide Path. B. Runway Localizer Beam.
C. Marker Beacon at end of runway or edge of field gives pilot audible signal as he flies through it.
D. Air-Track equipment installed in trailer which can be placed at either end of any runway.
E. Airport control tower, containing monitor unit showing operation of Air-Track, and the usual apparatus for two-way voice communication with pilot.
1 to 8. Readings on the single instrument by which pilot makes safe landing. Vertical needle shows position with reference to runway localizer beam. Horizontal needle indicates whether plane is above, below, or on glide path beam. FOR EXAMPLE: 1. On course and below glide path. 3. To right of course and below glide path. 5. On course and on glide path, etc.

scheduled air transport planes were grounded by impossible flying weather.

When a curtailment of funds necessitated a discontinuance of Department of Commerce activities on radio aids to flying, in 1933, scientists who had been employed at the Bureau were set up in a new laboratory at College Park where they continued their research and experiments.

Among these men were Gomer L. Davies, Dr. Frank G. Kear, Gerald H. Wintermute, and the late William H. Orton, who are largely responsible for the improvement of the Air-Track and its adaptation to commercial needs.

TECHNICAL DESCRIPTION

THE Air Track radio safe landing system apparatus is installed in a rapidly portable trailer which can be set at either end of any runway on the landing field.

Indications are given to the pilot by the Cross-Pointer Instrument mounted on his panel in the group of "flying" instruments. By means of the two indicating needles of this instrument the position of the airplane with respect to a definite, predetermined approach path to the field is indicated at all times during the landing. Passage of the plane over the edge of the field is indicated by a tone in the pilot's headphone caused by a simple marker beacon one of which is set up along each edge of the field.

The runway localizer transmitter is a double modulation visual radio range beacon. This transmits two figure-of-eight patterns, which overlap on four radial lines, thus defining four courses along which the intensity of each signal received is the same. One of these four courses is used to define the runway of the field on which a landing is to be made. Each figure-of-eight pattern carries a characteristic audio frequency modulation, thus making possible the differentiation of the two signals received.

The receiving equipment on the airplane picks up the signal radiated by the runway localizer transmitter and, after amplification and detection, delivers to the Reed Converter two voltages having frequencies equal to the two modulation frequencies of the transmitter and magnitudes which are dependent upon the position of the airplane with respect to the courses radiating from the transmitter. If the airplane is on course, the magnitudes of these two voltages will be equal. The Reed Converter separates these two audio frequencies by means of highly selective mechanical vibrating systems, or filters, converts the resultant currents to direct currents and supplies to the Cross-Pointer Instrument two currents, one of which is the sum of the two filter output currents, while the other is the difference of the two filter output currents. The sum current may be applied to the horizontal needle for volume indication and the difference current is applied to the vertical needle for course indication. When the two voltages applied to the Reed Converter are equal, that is, when the airplane is on course, the difference current applied to the vertical needle is zero and the needle remains on center, indicating that the plane is on course. If one of the voltages supplied exceeds the other, that is, if the airplane is off course, then the two output currents of the filters are not equal and the difference current applied to the Cross-Pointer Instrument has a magnitude which is a function of the angular distance of the airplane from the course and a direction of flow which depends upon which one of the two applied frequencies is the greater.

Guidance in the vertical plane along a path clear of obstructions from a safe altitude from the ground is obtained by means of the glide path receiving and transmitting equipment.

The transmitter and transmitting antenna system are located in in the trailer and the radiation pattern in the vertical plane is such that a line of constant field intensity is established which defines a suitable approach path to the field. The transmitter is modulated at a low audio frequency different from either of the frequencies used for the runway localizer transmitter.

The receiving equipment picks up the signal from this transmitter and converts it to a direct current which is a function of the intensity of the received signal. This current is applied, during the approach and landing, to the horizontal needle of the Cross-Pointer Instrument. When the airplane is on a particular line of field intensity, the reading of the horizontal needle is at mid-scale or on course. As long as the airplane is maintained in a field of the same intensity, the instrument reading remains constant, but if the plane should get below the path, the field intensity will decrease and the needle will fall, while if the plane rises above the path, the field intensity increases and the needle rises. Thus, the horizontal needle actuated by the glide path transmitter shows the position of the airplane with respect to the predetermined approach path.

The combination of the indications of both needles of the instrument, that is, the intersection of the two needles, shows the position of the airplane in two dimensions with respect to a safe landing path along the runway.

Bureau Reorganized

FOLLOWING Eugene Vidal's denial of rumors to the effect that he was planning to resign as Director of the Bureau of Air Commerce a few months ago, came substantiation last month of the long-predicted action on the part of the former Director who now plans to enter commercial aviation. His resignation was effective March 1.

Fred D. Fagg, Jr., the new Director, comes to the Bureau from Northwestern University, where, in 1929, he founded the Air Law Institute and has continuously served as its director in addition to editorial duties on the "Journal of Air Law."

Under the new program Major R. W. Schroeder has been appointed Assistant Director. "Shorty," as he is intimately known within the aviation industry, was previously chief of the airline inspection service and one of the most successful veterans of the old regime. He enjoys the distinction of having the complete faith and confidence of practically everyone in the industry and it is expected that his services in the new capacity will be of incalculable value both to the industry and to the Bureau.

A new and enlarged program, the direct result of adequate appropriations for 1938 now under consideration, in the words of Secretary of Commerce Roper, "will enable us to plan in a larger way for carrying forward further domestic development with proper attention to the promotion of safety for life and property."

Close contact with foreign markets will be maintained for the purpose of gaining more enlightened knowledge of consumer needs and supplying the demand in the most expeditious manner possible. For this work, Col. J. Carroll Cone and Rex Martin, former assistant directors, have been assigned to studies in foreign countries, Cone having been sent to Europe and Martin to South America. They will work in connection with the foreign commerce officers of the Bureau of Foreign and Domestic Commerce stationed abroad.

W.N.A.A. In the Southwest

National headquarters are in Denver; active chapters cover the area; and the eighth annual meeting is scheduled for Tulsa in May.

FRANCES BROWN

THE eyes of airwomen throughout the nation will be focused on Tulsa, Oklahoma, May 14th and 15th, when members of the oil city Unit of the Women's National Aeronautical Association will be hostesses to the Eighth Annual Meeting of that active organization. Tulsa unit members have been hopefully awaiting the decision and were elated to receive the announcement from Mrs. Carlos L. Reavis, national president of Denver, Colorado, that Tulsa was the final choice. Plans and committee appointments already are rapidly in progress and details will soon be announced by Mrs. Wright after conference with national officials.

Snapped at a recent regional meeting of the Southwest W. N. A. A. chapters and the 99'ers, left to right: Mrs. A. H. Anderson, W. N. A. A. governor for the State of Texas, Dorothy Pressler of Oklahoma City, W. N. A. A. officer and 99'er, and Jerry Honomichl, president of the Dallas group.

The National Association is a member of the Women's International Association of Aeronautics, and is affiliated with the General Federation of Women's Clubs. Its object is a united effort to coperate, aid and effect any betterment relative to aeronautics, and its members include not only women pilots, women engaged in commercial aviation, and women connected with aviation due to the activity of their husbands or other men relatives, but also women who have a general interest and enthusiasm in aeronautics. There are 15 active units throughout the country, with many other units now being formed. Those participating in the 8th Annual Meeting at Tulsa will be national officers, state governors, delegates from all units, and interested friends, coming from every section of the country. States where units exist include Utah, Washington, California, Wyoming, New York, Illinois, Florida, Massachusetts, Ohio, North Carolina, Michigan, Pennsylvania, Texas, New Mexico and Oklahoma. At Annual Meetings held in 1935 and 1936 at Dayton, Ohio, and Denver, Colorado, more than 200 women attended the conventions, and as new units have been added since last year, an even larger attendance is expected at the Tulsa meeting.

In this area there are large units at Oklahoma City and at Dallas, both of which have offered their cooperation to their sister unit at Tulsa for the May meeting. Members of the Oklahoma City Unit, who attended the Annual Meeting last summer at Denver, materially assisted the Tulsa Unit in getting the Convention by boosting her invitation. Last November, when the Oklahoma City Unit entertained the Tulsa Unit at luncheon, Mrs. Moss Patterson, president of the Oklahoma City Unit, assured the Tulsa group on behalf of her unit that full cooperation would be extended to assist Tulsa in entertaining the convention, and this promise was gratefully received. Gerry Honomichl, formerly member of the Tulsa Unit and now a resident of Dallas, is president of the new Dallas Unit. Coincidentally, Miss Honomichl was Tulsa's delegate at last summer's Denver meeting and presented Tulsa's convention invitation, so the Tulsa Unit is also looking forward to cooperation from the Dallas Unit. It is hoped that large groups from both Oklahoma City and Dallas will come to the May meeting.

The National Association holds its election meeting every second year. National officers will be chosen at Tulsa by the voting body, consisting of the national board of directors, the state governors, and delegates from the units. Units are entitled to one delegate in the voting body for every ten members. Tulsa has been represented this past year on the National Board by Mrs. W. S. Collier, second national vice-president. Another Tulsa member of the voting body is Mrs. A. M. Alcorn, newly appointed governor for eastern Oklahoma. There likewise will be members of the Oklahoma City and Dallas units in the voting body.

In addition to Mrs. Reavis, national president, at Denver, the National Board consists of Mrs. James Brazell of Oklahoma City, treasurer; Mrs. Larry Neff, secretary, and Mrs. Thora Wiseman, editor, both of Denver; Mrs. Schuyler Bell Terry of Chicago, first vice-president; Mrs. Collier, Tulsa, second vice-president; Mrs. George Shaw Greene of Dayton, governor at large; Mrs. Ulysses Grant McQueen of Beverly Hills, California, director; Mrs. Henry Boonstra of Salt Lake City, director. The founder president is Mrs. Orra Heald Blackmore of Detroit.

A SISTER organization of the W. N. A. A. is the Ninety-Niners, famous association of women pilots, of which several women in the Southwest are members. Honorary members of the W. N. A. A. include such outstanding women in aviation as Anne Lindbergh, Amelia Earhart, Louise Thaden, Ruth Nichols, Laura Ingalls and Phoebe Omlie.

Dallas held the spotlight on February 14 and 15 when the Southwestern members of the 99'ers and the Dallas Unit of the W. N. A. A. met in a body at the Melrose Hotel to transact regional business of the south-central division, composed of members from eight states. Discussions centered around legislation favorable to aeronautics. Presiding was Dorothy Pressler of Oklahoma City, division governor.

Saturday night the club's representation, including eight members, were the honor guests of the Dallas W. N. A. A. when 200 aviation enthusiasts danced to the music of Carl Allen's Orchestra.

The Ninety-Nine Club members present included Miss

(Continued on Page 26)

Beechcraft Models D17 and E17

Left: Side view of the Model D17W Beechcraft which turns out 235 m. p. h. cruising with its SC-G Wasp Junior. Note the graceful lines created by lengthening the fuselage.
Right: The cabin width has been increased to carry four passengers and pilot in greater comfort. Note absence of struts on the tail surfaces.

IN A 1937 offering to the flying public the Beech Aircraft Corporation presents a newly designed series of biplane models that offer many new features and innovations. Although similar to previous models in general appearance and basic design, the newest presentations have been completely re-designed and improved. Three different power plants will be featured in this year's models. There will be the D17R powered with the Wright R975-E3 nine cylinder engine having 420 h. p. and the E17 powered with the Jacobs L-3 engines having 285 h. p. Both of these engines have been used extensively on Beechcrafts as standard equipment in the past. However, the D17W model powered with the Pratt & Whitney Wasp 525 h. p. SC6 engine with 600 h. p. for take-off, is a new offering and will provide an airplane of spectacular performance in the commercial field. This airplane will be featured in the Beech exhibit at the Second Annual National Pacific Aircraft and Motor Boat Show.

The 1937 model retains the familiar features that mark its predecessors. Like all previous models, it is a wire braced biplane having pronounced negative stagger and retractable landing gear. The steel tube fuselage has been widened and lengthened and the motor mount made longer. The tail surfaces are more streamlined and present a much cleaner appearance due to full cantilever construction of fin and stabilizer. The fuselage has a much more streamlined appearance and the added length and elimination of the hump over the front of the cabin greatly improves the looks of the ship.

The wing design is similar to that used in the past except for a much heavier construction and with several changes and improvements. A notable item is the employment of the N. A. C. A. 23012 airfoil section and use of Friese aileron type flaps on the lower panels. The flaps are of the same construction and size as the ailerons. Independent electrical operation is provided with automatic stops for maximum down position and when running up to neutral. The maximum position is 50° and selective control is provided for any intermediate setting with a toggle switch mounted on the dash.

Ailerons on the new airplanes have a one inch greater chord than before and are very stiff. The aileron control system has also been improved by the use of increased cable travel, and the differential ratio has been changed so there is less up travel than before. Wing spars are heavier and rib spacing decreased for additional strength. Spacing of ribs on the D17 wing is only six and one-half inches and eight inches on the E17. The long double elliptical, dihedral racing type wing tips will be featured on both D17 and E17 wings this year although used on the Wright powered airplanes previously.

The fin and stabilizer are noteworthy from the standpoint of strength and stiffness. Both units are of wood construction, and both spars and ribs are of solid spruce. The fin is very securely tied with the rear spar extending down to a socket at the bottom of the fuselage and the front spar is bolted to both top longerons. The welded steel tube elevators and rudder are both fitted with trimming tabs. Elevators are fitted with static balances mounted on arms extending below and ahead of the hinge line.

The fuselage and heat-treated under trusses have undergone many changes aimed at simplifying the construction and providing more convenience for the operator by better cabin arrangement. As has been mentioned the fuselage is longer and much roomier by being widened six inches.

These changes have made it possible to extend the cabin floor from the front back to the rear of the baggage compartment, which lowers the baggage floor by six inches. The baggage compartment door is one inch wider and two inches higher than before. The cabin at the pilot's shoulders is four inches wider than before and at the rear seat the width is six inches greater. The rear seat has been moved back two inches and the cabin door enlarged so that the bottom corner is eight inches wide. Entrance and egress from the cabin is thus made very easy. In addition the use of automobile type hinges places the door ahead of the opening when passengers are entering and all these features make entrance and egress very easy.

Elimination of the flap lever and setting the brake lever near the centerline of the cabin provides a great deal more room for moving about the front seats. The latter have been re-designed and are one and one-half inches longer and one inch wider than before with provision for any style chair chute. The rear seat is of the hammock type and designed for maximum of comfort. It is very easily removable without taking out any bolts. A new type safety belt buckle is also provided that is very easy to adjust and release.

The instrument panel is made one and one-quarter inches deeper and more room is provided for instruments. The fuse box is enlarged and holds twice as many fuses as before. Various controls have been re-located for convenience and the instrument arrangement re-designed. A special Arens pressure release device is used on the landing gear retraction control. The fire extinguisher has been recessed into the floor to provide more space under

the panel. The moulded safety glass windshield has the same contour as before but the two sections are separated in the center by a panel of flat glass eight inches in width.

Detailed improvements on the landing gear and tail wheel greatly improve these units. Although the same retraction mechanism is used as before improved limit and reversing switches are employed. Larger diameter shock absorbers are used on the landing gear for better shock absorption characteristics while the tail wheel shock travel is increased two inches to reduce any galloping tendencies. The tail wheel assembly is also moved back considerably providing a longer wheel base. A new retraction motor having 100 per cent more power is used to retract the landing gear and provides quicker retraction. Self lubricating bronze bushings are fitted on the tail wheel slide to insure easier operation.

The engine mounts of both Wright and Jacobs engines have been moved forward to compensate for lengthening the fuselage. This results in increased room for installation and servicing of accessories. The Wright engine has been shifted five inches while the Jacobs has moved two inches. The cowling has been re-arranged and at present cowling may be easily removed on both D17 and E17 models for servicing the engine.

In addition the N. A. C. A. cowl has been shortened and the exhaust stack streamlined with an annular inner cowling ring. The exhaust stack heat jackets have also been modified to provide sufficient heat for any amount required for cabin and carburetor heat.

Exhaustive wind tunnel tests indicate that the new models will not suffer any on performance as result of enlarging the fuselage. In fact readings show it to be somewhat faster although tests will be necessary to corroborate this.

SPECIFICATIONS:

Span	32′ 0″
Length	25′ 3¾″
Height	8′
Wing area (total)	296.4 sq. ft.
Ailerons	23.75 sq. ft.
Flaps	23.75 sq. ft.
Fin	6.57 sq. ft.
Rudder	15.28 sq. ft.
Stabilizer	24.47 sq. ft.
Elevators	16.56 sq. ft.

PERFORMANCE:

Cruising speed	235 m. p. h.
Landing speed with flaps	55 m. p. h.
Initial climb	2,500 ft. per min.
Service ceiling	20,000 ft.

Aeronca Model K

MAKING its public debut at the New York Aircraft Show in January, the newly designed high-wing, side-by-side Aeronca Model K afforded air show visitors a pleasant surprise. Its predecessor, the Aeronca C-3, is primarily a student trainer especially designed to simplify flying for the beginner. The new Model K goes a step farther and while it is entirely different from the C-3 in appearance, it has retained the same distinctive flying characteristics, and increased its utility through fundamental design changes.

Months before a single line was drawn, a comprehensive survey was carried on among pilots to ascertain just what they desired and expected in a plane of this price and class. The beneficial results of this survey were incorporated into the Model K. From the nose to the rudder, every line was designed to carry out the smooth, streamlined effect of the ship. The cabin is surprisingly roomy, the engine carefully cowled, and the backsweep of the hood in a smooth line to the rakish windshield, which is set at 45° angle for smoother airflow. The windshield is singularly free from distortion and reflection of light inside the cabin is reduced to a minimum.

A great deal of attention has been paid the appearance of the interior. An unusually wide door allows full freedom in getting in and out. Large, clear windows in the doors are raised and lowered in much the same manner as automobile windows. The floor is remarkably free of obstructions. Twin control wheels come out from the wide instrument panel.

The seat is upholstered in tan and the top lining is in matching colors. The cushion is made of soft, wear-resisting material, pyratex moulded to a comfortable seat. The cushion is completely removable and designed to be taken out and replaced with any seat-type para-

The New High Wing Aeronca Steps Along at 85 m. p. h. Cruising.
A complete re-designing of the famous C-3 Aeronca has resulted in better streamlining, sloping windshield, single-strut landing gear, wider cabin, improved visibility and more weight allowance.

chute. Suitable space is reserved for radio mounting.

Directly to the rear of the seat is the roomy baggage compartment which is designed to hold enough baggage to suit the cross-country flyer, and, with increased gas capacity of ten gallons, the cruising range is increased to permit this type work.

The single-strut landing gear is a complete departure from previous gears used on small light airplanes. Two large oleos work in conjunction with heavy springs for taxying ease. A feature of this gear is the metering jet that squirts the oleo fluid into the outer barrel of the oleo to prevent violent return. The tread is wide and since the ship can be equipped with brakes (optional equipment) it can be stopped in the smallest of fields safely.

The construction is similar to the Aeronca C-3. The fuselage is three longeron. All structural tubes are chromemoly and the skeleton structure is faired into a smooth circular shape by means of spruce stringers supported by plywood bulkheads. The wing section is the Clark Y airfoil and is of conventional design. Solid spruce spars are spaced 25 inches apart with spruce ribs throughout. The Warren truss type of bracing is utilized. All drag wires are 3/16 inches in diameter. Struts have replaced the wires and cabane used on the C-3.

The door opens forward and exit and egress is made behind the wing struts, eliminating danger of being struck by the propeller. The ailerons are of the frieze type and are set in "Oilite" bearings to insure smooth action. Aileron loads on the wheel are further reduced by Nice ball bearings. Ailerons are of dural ribs and spars with the horn as an integral part of the construction. This dural framework is covered with cloth and doped.

The model K may also be secured as a seaplane with Edo floats. The new Aeronca E-113C engine of 40 h.p. at 2,500 r.p.m., furnishes the power and consumes only 3 gallons per hour at cruising. Oil consumption is at the rate of 1/4 pint per hour.

DIMENSIONS:

Wing Span	36 ft. 0 in.
Length	20 ft. 7 in.
Height	6 ft. 7 in.

WEIGHTS:

Empty Weight	590 lbs.
Useful Load	450 lbs.
Gas (10 gallons)	60 lbs.
Oil (3 quarts)	6 lbs.
Pilot	170 lbs.
Passenger	170 lbs.
Baggage	44 lbs.
Gross Weight	1,040 lbs.
Wing Loading	79 lbs.
Power Loading	23.1 lbs.

PERFORMANCE:

High Speed	93 m.p.h.
Cruising Speed	85 m.p.h.
Landing Speed	35 m.p.h.
Rate of climb	450 ft. per min.
Gliding angle	10 to 1
Service ceiling	12,000 ft.
Cruising Range	250 miles

News of the Month in Review

The Manufacturers

An increase of approximately 78 per cent in the total number of airplanes manufactured in the United States in 1936, and of 66 per cent in the number of light airplanes of the private owner type, is shown in aircraft production figures for the year made public recently by the Bureau of Air Commerce.

The total of all aircraft produced was 3,006 in 1936 as against 1,691 for 1935. The increase is striking in small civilian airplanes of the types suitable for private owners. The greatest increase in this class occurred in the number of two-place cabin land monoplanes. In 1935 there were 458 manufactured while 938 were constructed in 1936. Three-place cabin land monoplanes increased from 83 in 1935 to 96 in 1936. Of the total 1936 production, 1,637 aircraft were for domestic civil use, 858 for military establishments, and 511 were exported. The industry produced 1,433 monoplanes and 204 biplanes. The 1,433 monoplanes included 110 of the open cockpit type and 1,323 cabin craft. Of the biplanes 29 were open cockpit and 175 were cabin planes.

The Aeronautical Chamber of Commerce of America announces that deliveries of aircraft and aircraft engines and spare parts totaled $5,618,978 for January, 1937, compared to a total of $3,463,950 for January, 1936, an increase of 62 per cent. Deliveries of commercial aircraft in January, 1937, were 102 units valued at $1,109,397 as compared to 37 units valued at $333,703 for January, 1936—a dollar increase of 232 per cent. In January, 1937, there were delivered 167 commercial engines valued at $598,781 as compared to January, 1936, deliveries of 140 valued at $494,409, a value increase of 21 per cent. Military airplanes delivered in January, 1937, were 21 airplanes valued at $1,099,726 as compared to 47 airplanes valued at $1,031,139 in January, 1936—a dollar increase of 6 per cent.

New 1937 Hammond Model "Y" was given a secret and successful test flight March 7th, at the San Francisco Municipal Airport, by Lloyd Stearman. It is to be exhibited at the Pacific Aircraft Show where it will attract much attention due to its proved simplicity of operation. The company announces their plant is running full capacity, 15 ships being under construction, the first five of which, half-completed at this writing, will be delivered to the Department of Commerce. The factory reports production sold well through the middle of the year. Distributorships are being called for throughout this country and in many foreign lands, but as yet only two have been awarded: to R. P. Bowman of Oakland and to Jim Webster of Los Angeles. Many more are forthcoming.

Porterfield Aircraft Corporation have sold more than 160 of their Model 70 in less than two years. February contracts cover the sale of 98 airplanes, this in addition to contracted orders for 108 ships on file prior to the opening of the show in New York.

The National Aeronautical Association confirmed the establishment of a world's record by Major Alexander P. de Seversky when he flew his amphibian over a 100 kilometer course at Miami Dec. 19th, 1936. The Contest Boards official report stated his average speed was 209.451 miles per hour, 36 miles faster than the previous record held by a Grumman plane.

Taylorcraft have announced the appointment of Mr. Stanley I. Vaughn as factory manager. Mr. Vaughn has the unique record of building more airplanes than any other person in the United States, having directly superintended the construction of 8,436 ships. He was formerly with Curtiss-Wright. The Taylorcraft ship has recently been shipped to California for the Pacific Aircraft Show.

Fairchild is now developing a 24 cylinder engine of about 1,000 h. p., for military use. Four air-cooled banks of six cylinders in-line are used; each unit is connected in the center of the assembly to a propeller shaft which is hollow for the muzzle of a small cannon. Refined streamlining will make for more speed and better visibility. This "H" engine has an over-all width of less than 30 inches, 40 per cent less than the smallest radial engine of equal horsepower. Other new smaller in-line engines are being manufactured by Fairchild, with similar features.

Beech Aircraft Corporation has announced the appointment of Mr. John P. Gaty as sales manager. Formerly with the Fairchild Aerial Camera Corp., Mr. Gaty is both an able pilot and technician, having invented devices in radio, aerial photography, and other aeronautical branches. Mr. Walter S. Campbell of New York was elected a director March 1. Walter H. Beech, president of the corporation, pointed to the expected 50 to 75 per cent increase in business in 1937. The Beech exhibits at the Pacific Aircraft Show this year will include the new D17W Wasp-powered Beechcraft as well as a specially finished Jacobs-jowered job. The all-metal twin engined Model 18 will be flown during the show on demonstration flights.

Another sizeable order has raised the Ryan Company's backlog of contracts on hand to a new high of about $300,000.00. Advance orders have already eclipsed the entire 1936 production figures. Additional foreign sales have been reported. Large orders of the new all-metal Ryan S-Ts have been shipped to South Africa and Australia. The company is completing plans to expand its manufacturing facilities 200 per cent above its present capacity; additional drop hammers are being

installed immediately. Howard Batt will be in charge of the Ryan exhibit ot the Pacific Aircraft Show. One of the new all-metal S-T 125 h. p. models will be shown.

Fleetwings, of Bristol, Pa., have announced the appointment of two new distributors of the Fleetwings stainless steel Sea Bird amphibian. They are: for the state of Washington, Washington Aircraft & Transport Company; for Ohio, the H. C. Robbins Company of Cleveland.

Rearwin Airplane Company announce that a recent shipment to Brazil has resulted in 25 per cent of privately owned planes there being Rearwin Sporsters. Orders have also been received from South Africa, Phillipine Islands, Argentina, Alaska, and Australia. The Rearwin company has the greatest backlog of orders in its history; although the plant has twice the capacity and employees as a year ago, sales are ahead of production. Recent factory changes, however, will speed production.

Menasco Manufacturing Company announces an 82 per cent increase in permanent employment over last year. Art Chester, engineer and racing pilot, has joined the company as head of its service department. President Menasco has announced purchase of a new factory site and a building having a capacity of more than 45,000 square feet of floor space. "With the steadily increasing domestic and foreign demand for aircraft engines, gradually we are outgrowing our present plant which will not accommodate our present rate of expansion for very long," he said. "The newly purchased factory contains more than a third more floor space than our present plant and has expansion possibilities to accommodate our needs for future years." Administrative offices will be housed in a new adjoining unit. All other departments will be located in the factory building. Test stands will be built on the nearby property.

Establishing what is virtually a national precedent in the current wave of "sit-down" strikes and agitation of industry by outside influences, the employees of Lockheed Aircraft Corporation, in a mass meeting February 25, told representatives of the Committee for Industrial Organization and its affiliated groups "to get out and stay out" of their factory.

Lieut. A. S. Pierce of Taylor Aircraft Company has started a flight from Bradford, Pa., to Los Angeles, in a Taylor Cub using the new Everel one blade propeller, which is an invention of W. W. Everts. So far this new propeller has proved its soundness of operation and its dependable simplicity of operation. It is to be exhibited at the Pacific Aircraft Show together with a New Silver Cub, a De Luxe Cub and a Cub Seaplane. The Taylor company have recently ordered 25 sets of Edo seaplane floats, the largest similar order ever received by the Edo concern. An increase of 160.7 per cent of Cubs during 1936 over the previous year has been announced by the company. 550 Cubs were manufactured and sold during that year, being 36 per cent of the total of all commercial aircraft sold in 1936. On a recent 382 mile flight from Bradford, Pa., to Providence, R. L., Lieut. Pierce in a Taylor Cub averaged 38.2 miles per gallon of gas and used one quart of oil. These figures, Mr. Pierce said, constitute a world's record for economy.

Bendix Aviation Corporation has arranged with the Pan American Airways a plan whereby that latter company's radio direction finder will be made available to all American aviation interests. This navigation aid, not to be confused with the Bendix radio compass, has hitherto been exclusively used by Pan American. Mr. Bendix stated: "Developed privately by Pan American's own engineers, the instrument by constant use under all conditions over a period of seven years has been established as the most efficient and dependable 'locator' thus far available. Pan American Airways has granted the Bendix Company the sole rights to manufacture their direction finders in order that they might be made available to the general industry in the United States and its possessions."

Lockheed has delivered a fleet of six Electras to the Polish Air Lines. These are the standard bi-motored ships using Wasp engines, carrying ten passengers and cruising normally at 195 miles per hour. Polish Air Lines is one of the largest systems on the Continent, serving the area from the Baltic to the Aegean Sea. Lockheed's chief test pilot, Marshall Headle, with mechanic Ray Buckminster, will instruct their pilots. The pair will first journey to England to instruct pilots of British Airways, owners of four new Lockheeds for their Sweden and Paris runs. Thence Headle will go to Roumania to launch the Lockheed service of Industria Aeronautica Romana. Next, after performing similar duties at Belgrade, Jugoslavia for the "Aeropout," he will return to New York and go to California for a series of test flights for the new high speed Super Electra now being built by Lockheed.

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Ports of Call

Correspondence from the Airports and Airways

Bloomington, Illinois

By C. A. Zweng

The Ninth Annual Roundup of the American Legion of Illinois is to be held at Bloomington on Sunday, April 25. This is always a joyful occasion. State headquarters are at Bloomington.

The Illinois Aeronautical Commission is putting out a new multigraphed bulletin. It keeps Illinois airmen informed of the state's activities.

Under government aid, the Bloomington municipal airport is getting wider runways and other needed improvements.

A Buhl is the latest addition in the hangar.

Walter Williams, vice-president of Williams Oil-O-Matic, has flown to Miami in his Travel Air with Art Carnahan as pilot.

Leo Jackson, transport pilot, is active with his Travel Air. New students are coming out from winter quarters.

Blanche Noyes was guest speaker before the N. A. A. chapter in Springfield on January 12th.

Chattanooga, Tenn.

By H. L. Gauntt

The former Chattanooga Air Service, Inc., has been reorganized under the new name of Allied Air Service. "Bud" Whiteside was added to their payroll and an excellent Waco F-2 is a new addition to their fleet of two other Wacos and a Taylor Cub. Business has been very good. They have overhauled the Taylor Cub which was cracked up at Cleveland, Tennessee, and have had numerous charter trips and lots of student instruction. Rumor has it that they will lease the entire new hangar which now lacks only the concrete aprons.

One of the visiting planes worthy of mention was a Luscombe Phantom piloted by L. A. Hirsch of Cleveland, Ohio. This remarkable little ship received the praise of all the pilots on the field.

Charlie Franklin returned to Chattanooga on a leave of absence after completing his Navy Training course at Pensacola, Florida. Charlie was a popular flyer about town for many years and will soon leave on his tour of active duty.

A late model Chance-Vought from Pensacola, piloted by Lieuts. W. S. Denham and E. M. Condra, gave us a one-plane air show not long ago. After many perfectly executed stunts, including loops, rolls and spins, they negotiated a dive at 320 miles per hour much to the thorough enjoyment of all present.

Chattanooga was indeed honored recently by an overnight visit from Gar Wood, the famous speed boat king. He is a most cheerful, gay gentleman for his age and flies with his own Fairchild "Baby Clipper," which is equipped with about all the conveniences of a modern bungalow, or should we say auto trailer?

Cincinnati, Ohio

By Al F. Davis

March came romping in like a carefree lamb and with it a flock of good flying weather. So, for the past few Sundays the crowds have been unusually large at Lunken Airport. Considerable student flying has accompanied the good weather.

Work on the new Administration Building is being pushed as fast as possible, but with the recent high waters delaying the work, no one knows when the structure will be finished.

The new addition to the sales office of the Aeronautical Corp. of America will soon be ready for use. This new wing will more than double the present floor space of the Sales Department.

Cincinnati's newest air service, to be known as "Wings, Inc.," is about to get under way. Ralph Meguire, Ed Deister, and Sam Glueck are forming this new venture. The company is to be dealer for Porterfield airplanes in this area. All three of these airmen are widely known in this part of the country. Meguire was formerly a pilot for American Airlines.

Jim Welsch recently returned from a trip in the east and reports that orders for the new Aeronca High Wing continue to pour in.

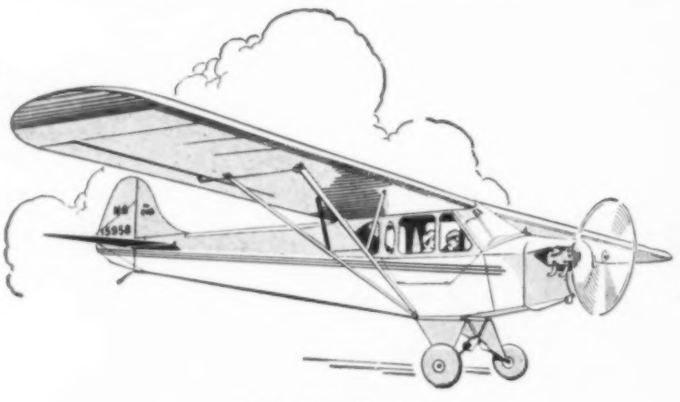
Coffeyville, Kansas

By Harold E. Haggard

Lynn Berentz, our airport manager who has been hired by the Jensen Brothers Mfg. Co. to fly their newly purchased Waco, had a bit of tough luck with the ship on a recent business trip to southern points, after successfully landing in a rough field near Rodessa, La., a wheel fitting gave way while the ship was still rolling. The bad wheel turned inward toward the fuselage, causing the Waco to turn over. Fortunately, Lynn and Ray Jensen, his passenger, both had their safety-belts fastened and got out of the inverted ship without a scratch. The plane is being repaired in Shreveport.

Inspector Jim Douglas re-licensed the Inman Brothers Ford Tri-Motor, which has undergone a complete major overhaul in the local shops. To celebrate the completion of the winter's job on the Ford, the Inmans planned an air show for last Sunday, March 14, but due to cold weather, the show will be held the next Sunday, weather permitting. Work now has started on the Boeing 80-A, scaffolding has

1924



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CANDLER FIELD ATLANTA, GEORGIA

been built which will allow the workers to clean the ship quite thoroughly, and to remove the three Hornets, which will receive majors. To the casual observer, it would seem as though a hangar is being built around the Boeing, so much lumber being needed to scaffold the big ship. The Inmans intend to start their season about the middle of April, working eastward until November, when they will return to Coffeyville for the usual winter overhauls. Howard Simmons has been hired to keep the Ford and Boeing motors ticking through the season. Howard is a licensed mechanic, he has seen two and one-half years service in the Phillips Petroleum Company's Aviation Division, previous to which he worked for Star Aircraft Co., he will take the place of Melvin Hart who has taken a position as mechanic for W. G. Green of the Commercial Airport, Tulsa.

Henry Duncan has sold his dismantled OX Robin to Beale Robinson of Independence, Kansas.

Several army ships have been in during the past month, including a Consolidated P-T flown by Major Tom Dawson from Kansas City: Lieut. Macklin flying a Curtiss A-17 from Barksdale Field, Shreveport to Lawrence, Kansas, spent a few minutes with us. Berentz, who is an Army Air Corps Reserve pilot, brought a Curtiss Falcon down from Kansas City to the delight of the airport attaches who greatly enjoyed the loud roar the Falcon's D-12 engine put out. A Douglas O-46A from Kansas City completes the list of army ships.

Mr. R. L. Hahn who operates several automobile supply houses in Oklahoma was a visitor from Tulsa, Mr. Hahn was flying his Rearwin.

Dallas, Texas

By Sally Bryan

The Dallas Unit of the W. N. A. A. was entertained at a delightful buffet supper by Mrs. A. H. Anderson and Miss Gerry Honomichl on Feb. 1. A collection was taken for the Flood Relief Fund. On Feb. 13th our dance was held at the Melrose Hotel. Carl Allen's orchestra played and the floor show was unique. Mr. George Haddaway was delightful as master of ceremonies and Dr. Joe Simmons told one of his famous wop stories in dialect. The grand climax of the show was the Rosebud Chorus, copied from the Fort Worth honky-tonk show. It included Messrs. Andy Anderson, Lee Bishop, Bub Merrell, and Bob LeSage. They wore tiny pink tulle ballet costumes and blonde Mae Murray wigs, along with their gentleman's regular lower-deck haberdashery. A number of out of town guests attended, including the ninety-niners here for their sectional meeting, and Mr. and Mrs. Moss Patterson of Oklahoma City. Our next regular meeting was on March 8th, when we took in seven new members, making our total 56 and ours the largest, besides the youngest, Unit in the U. S. We discussed means of obtaining a radio range for Love Field; a committee was selected. We hope the proposed extension of Pan American will assure installation of a sorely needed radio beam. The Unit has planned another entertainment for the W. N. A. A. scholarship fund, for which we pledged fifty dollars.

Lou Foote Flying Service, Taylor Cub distributors, have taken delivery on six new Cubs since Feb. 1 to: L. E. Derryberry, Abilene; L. K. Bray, Pampa; Roy Taylor, Kilgore; Russ Finefrock, Tyler; and J. O. Casparis, Dallas. Two more Cubs have been ordered and will be delivered soon, one to Wilbur Parish of Waco.

A tentative itinerary for the 1937 Texas Air Tour has been drawn up by the "executive" committee and is open for revision or suggestions. Planning to start from Dallas, Thursday, May 13th, the tour would call at Abilene, Sweetwater, San Angelo and Del Rio (where Dr. Bohocahocahackiack might hold forth on Dr. Brinkley's powerful radio station across the Mexican border) for the first day. The second day would include Eagle Pass and Laredo, third day Corpus Christi, fourth day Galveston and Houston, and fifth day Austin. Looks like another famous cruise—fun, feasting and distributors of good will.

Dallas and Southwest airmen have learned that Charles A. "Buck" Rowe is resigning as supervising inspector for the Department of Commerce to take a position as Divisional Manager, Aviation Department, Gulf Oil Corporation in the territory west of the Mississippi River. Although there has been no definite announcement as to location, Buck will probably maintain headquarters in Dallas. Consequently the Department of Commerce loss will not be our loss for he will probably remain in our midst.

Few airmen have contributed more to aviation in the Southwest than the man who has been our aero inspector for so many years. He has taken active part in every phase of aeronautical activity in these parts and his loyal service to the government will be sorely missed. His successor in office will certainly have a difficult job to fill the shoes of the retiring Rowe.

Likewise, few men have had as varied a career in aviation. Buck

Listen Son, There'll Be a Beechcraft Ready When You Are . . . .

Across the never-never lands of Australia, deep in the jungles of South America, in icy Alaska and across our United States Beechcrafts are flying swiftly and safely . . . because Beechcrafts are stronger, faster and easier to fly.

True Beechcrafts are years ahead of any ships in their class. Yet the men who build Beechcrafts are never satisfied. Today plans are being made for the greater ship you will want when you take over the controls five or ten years from now. Meanwhile find out all you can about Beechcraft . . . see it at the airports . . . watch it win races . . . wherever possible compare Beechcraft with other ships and notice the important differences that make it the ship of the future . . . as well as the ship of *Today!*

Happy landings, son!

BEECHCRAFT

6413 EAST CENTRAL WICHITA, KANSAS, U. S. A.

BUCK ROWE

Who leaves the Department of Commerce as Supervising Inspector for the position of Regional Manager of Gulf Oil Corporation's aviation division with territory west of the Mississippi.

Rowe has long been identified with aeronautics in the Southwest, taking his first inspector's job in St. Louis in 1928. He learned to fly in the Navy during the war and served nine months on active duty in France on the North Sea submarine patrol.

was raised in Baltimore, attended the Boys' Latin School, studied Civil Engineering at Gettysburg College, was a football and baseball star and a member of Phi Delta Theta. He afterwards played three years of professional baseball.

He entered the Navy in 1917 and became one of the early birds in the Navy. He served at Bay Shore, L. I., Miami, Key West and at Pensacola, where he was a member of the first night flying class. He served nine months in France as pilot in the northern night bombing group and on the North Sea submarine patrol. He returned to the states and became a Navy test pilot in the famous Squadron Three which was the experimental section at Hampton Roads, where Al Williams, Jack Garton, Harold Brow and Rutledge Irvine held forth. He took part in the bombing of German ships off the Virginia Capes in 1921 and for a time was attached to the U. S. S. Ohio while working on experiments for controlling vessels by radio.

Buck resigned from the Navy and became manager of Atlas Rock Company in Miami, Florida. He later took a position as chief pilot of Cuba America Airlines and returned to active duty in the Navy. In 1928 he became aeronautical inspector with base at St. Louis and was subsequently stationed in New Orleans and Miami. In the summer of '29 he was made Aero School inspector and was stationed at Tulsa until September, 1930, when he was promoted to Supervisor of the 7th district with headquarters at Dallas. In 1932 he was transferred to Los Angeles as supervisor but returned to Dallas in the Fall of 1933 and has been with us ever since.

It's our sincere hope that Gulf will keep Buck "as close to home" as possible, although the sale of Gulf products will no doubt skyrocket with Buck at the controls and might require frequent absence from the old stomping grounds. However, the chances are that Buck might have even more time to devote to good-willing and constructive work in our many aviation enterprises and activities, even though what-a-man Rowe will be selling gas and oil instead of D. O. C. regulations.

El Paso, Texas

By John Thacker

Your correspondent recently made one of the most picturesque and beautiful runs in the country, namely, Varney Airline's route north from El Paso to Pueblo.

Leaving El Paso at 11:15 a. m., we were on our way north, flying on the east side of the Franklin range. Ahead of us lay the sheer, spectacular Organ Mountains, and to our right there was Old Baldy, its snow-white crest staring us in the face. After pursuing our course for about ten minutes, we began to wonder at the extent of that golden stretch between these mountains and what mysteries lay hidden in their sunny depths. I was reminded of a bit of verse read long ago:

"Full many a flower is born to blush unseen,
And waste its sweetness on the desert air."

To our right lay an enormous expanse of silver known to all as the famous White Sands. How old they are, how they were formed only God himself knows. Right here we decided that the best way to enjoy scenery is to fly over it. To our left was a great valley covered with something black—lava from an extinct volcano thousands of years old. Imagine such a variety of beauty in fifteen minutes!

Flying along the Rio Grande River we suddenly came upon Elephant Butte Lake—a great hydraulic masterpiece and sports center. It gets its name from a protruding mountain near the shore which resembles an elephant's head.

Our first stop was the old Indian town of Albuquerque, so full of romance in history and legend. Here Varney connects with T. W. A. After half an hour's pause, we took off and flew between two huge snow capped mountains. Landing at historic old Santa Fe, located at the base of an immense peak, we stepped out to find the air surprisingly mild and agreeable.

Off again! Our next stop was Las Vegas, New Mexico. There we were furnished a delicious lunch—a half fried chicken, six sandwiches, eggs, pickles, olives, and potato chips; thus equipped, we rose again, and found ourselves at length high above several frozen lakes, glistening like jewels below us. At Trinidad we landed and left the mail. Nearby lies Fort Union, a picturesque old frontier outpost that marks the end of the Trail of the Conquistadores. Up again, we headed for Pueblo, passing on our left the snowy and bristling peak of Sangre de Cristo. Before we knew it we were at Pueblo, where Varney connects with the Wyoming Air Service. Thus in a few hours we had followed the trail that the courageous Conquistadores took months to complete.

Mr. Avery Black, President of Varney Air Transport, Inc., announces the purchase of a fleet of all-metal Lockheed "12" airplanes to be placed in service over air mail route AM-29, between El Paso and Pueblo, Colorado, via Albuquerque, Santa Fe, Las Vegas, New Mexico and Trinidad, Colorado, making a direct connection for Denver and points north at Pueblo, within three months.

Houston Municipal Airport

By Clyde Foreman

In checking up on the commercial flying out of this airport, we find that the Texas Pipe Line Company's 285 Wright powered Waco job has flown during the period of July 1 to December 31, 1936—66,043 passenger miles—38,145 ship miles and carried 125 passengers. Mr. B. E. Hull, President of the Texas Pipe Line Co., has been a passenger on every trip flown during this period. The ship is piloted by W. A. (Bill) Moores former airline pilot who built up an enviable record of maintaining schedule while with the airlines. Mr. Hull first accepted the airplane as a necessary means of transportation back in the old Standard days when he carried the Texas Company payrolls over the wilds of Mexico. He was piloted during those days by such pilots as Frank Hawks and Joe Glass. Some of the recent trips were made to Canada, Florida, California and New York.

Monroe "Deacon" Ebner, formerly connected with Harry Hammill's flying service, is now in charge of the maintenance department for Air Activities, Inc.

Mr. McCoubrey of the National Guard Air Corps tells us that this airport has been visited by fifty-nine BT8's and BT9's, seven A12's, and six bombers during the month of February. Colonel Tinker of the regular army was a visitor here on the 15th, 16th, and 17th, in an 0-46. We also find from the same source that slightly over 1500 army ships stopped here for service during 1936.

In anticipation of the spring rush, Air Activities, Inc., has stocked up on airplanes and now have a large supply of slightly used airplanes in a wide price range.

Eddie Ross, pilot for Loffland Bros. Co., has been a frequent visitor for the past month in the company's Lockheed 12. Eddie is creating lots of interest in the N. A. A. in these parts.

J. D. Reed has just received his appointment as second lieutenant in the National Guard Air Corps unit stationed on this field.

Air Activities, Inc., southern distributors for Taylorcraft, have had their demonstrator about two weeks at this writing and are exremely

STANAVO
AVIATION GASOLINE
AVIATION OIL
ROCKER ARM GREASE

pleased with the outlook. The ship has been kept on the field since its arrival from the factory and prospective customers and dealers have come from far and near to fly and see it. The general opinion is that it will be a hard ship to beat in 1937.

Houston Main Street Airport

By Emmett B. Cassady

Mr. Hubert Sessions, mechanic of great local renown, is back on the job after a long vacation. Hubert is conspiculous these cold days in an enormous straw hat—must be tough to herald spring in such a fashion. Bill Laming just returned from a flight to Detroit and was driving a new Lincoln Zephyr. Bill made the trip in two and a half days, with a handful of road maps for clothing and a large leather coat for emergencies. We hoped to hear a long tale from Bill but as yet can't get him wound up. Earl Barker traded his KR-21 for our Stinson and we have been getting a lot of favorable comments from the students flying it. Several students made their solo flights last month: Clarence Nelson of Goose Creek, Jack Miller, Adolph Pfeffer, Arthur Mills, W. S. Dunn, L. D. and A. M. Higbee. Jim Short, W. S. Dunn, Bill Woodruff, Adolph Pfeffer, Lawrence Roberti, J. W. Hopkins and Claude Harris have soloed the KR-21 and are waiting for bigger things. Anticipating a large increase in student flying we have ordered two new Cubs; one will have the twin ignition engine. Mr. J. L. Schroeder, upon his return from a Florida vacation, will add many improvements to this airport—a new hangar, larger parking area, and a new shop are among them.

Lafayette, Louisiana

By Horta Jones

Activities at our airport are flourishing beautifully. There are several new students from Southwestern College who turn out between classes and after school hours. The CCC camp stationed here has shown a lot of enthusiasm in that the boys drive out to the field quite frequently to fly.

Lt. G. M. Jones, manager of our airport, has recuperated from injuries sustained at the airport when he tried to fly a hangar door and has resumed his duties. He conducts a class in aeronautics at the CCC camp here every Tuesday evening at 7:00 p. m. The boys are highly elated over the idea and show a great deal of interest. The Commanding Officer received two airplane motors, a Liberty and a Curtiss D 12, not long ago. The boys are instructed in ground flying and mechanics.

Our flying friends and aviation enthusiasts will be glad to note that the City of Lafayette has purchased an all-steel hangar, which will be erected in the near future. It is 100 feet square. Visiting ships will have all accommodations necessary and will not have to remain outside much longer. Bring on your Lockheed 12's, Cessnas, Stinsons, and what have you! We can take care of you now.

Recent visitors have been Guy Johnson, Houma, Ted Von Rosenberg, Ray Lucas, New Orleans; Dude Camden, Tulsa; Fred Casler, Tulsa; Cates Eppright, and Charles Williams, Oakdale.

Mrs. Louis Leonpacher, local woman pilot, attended the district meet of the 99'ers at Dallas recently. She received the honor of being the member who traveled the longest distance to attend this meeting. Yours truly was very happy to learn that on her return trip Mrs. Leonpacher stopped at Fort Worth and visited the offices of Southern Flight. She had a very good word for the editor, George Haddaway, and paid a high compliment to the publication.

Mr. E. E. Hughes, Federal Inspector, and Mr. D. O. Langstaff, State Inspector, flew in here from Baton Rouge not long ago in their Fairchild. They were very well pleased with the progress and interest shown in aviation in this section and commented on it. They also praised our azelias, as it so happened and that the azelias were all in bloom at the time of their visit.

The Evangeline Chapter of the National Aeronautic Association held its monthly meeting last month at Opelousas, at the Forest Castle Club. Important business was discussed and voted on. After the meeting the members enjoyed a delicious turkey dinner. Then followed dancing. Donald Kemper was chairman of the arrangements committee.

Federal Inspector Lake Littlejohn of Shreveport called on us during the month and promised to do so again soon. He seems to have remembered as he has placed Lafayette on his itinerary for the coming month.

Felix Foreman, young limited commercial pilot, is working mighty hard toward his transport pilot's license. It shouldn't be long now. He's piling up the hours.

The Evangeline Chapter, National Aeronautic Association, unanimously passed a resolution urging formation of a standing committee in Congress on civil aeronautics at its regular meeting held recently at Opelousas. Copies of this resolution are being sent to the Louisiana Congressmen from this district.

The meeting was called to order by Dudley Avery, newly elected President. Revised by-laws were read and members requested the privilege of studying them until the next meeting. Copies are to be mailed to all members.

Mrs. Horta G. Jones was given a rising vote of thanks for her painstaking journalistic efforts which had made the Lafayette flyers well known to the people at Dallas. Mrs. Leonpacher, reporting on her recent trip to Dallas to the 99 Section Meeting, found she was not a stranger there.

Dudley Avery displayed pictures of various flyers and planes suitable for framing which have been donated the Chapter. At some later date

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HEAVIEST?

If you are selling airplanes and the prospect says he's too big for a small ship, just refer him to Joe Heinan of Branch, Louisiana. Topping the scales at over 300 lbs., Mr. Heinan flys regularly about the southern Louisiana Gulf country and bids for top honors as the South's heaviest flyer.

they are to be framed and hung in Chapter Headquarters at the Evangeline Hotel.

Eleven new members were added to the roster of the chapter.

The next meeting will be held in Lafayette on Thursday, March 25th.

Miami, Florida

By Karl Voelter

Never before in the history of Miami's Municipal Airport has there been so much concentrated flying from this field as this season. The two hangars operated by the city and Karl Voelter have been taxed to the limit for storage space and outside there seem to be as many ships as inside.

Karl Voelter, operating eight ships and charter service, reports student flying at a peak. All his flight operations have been changed from All American to Municipal Airport, the former being used for storage only. In his All American hangar is a new experimental job built by Rose Aircraft Corp. of New York which has had preliminary test flights by Joe Marrs of Voelter's staff.

J. Paul Riddle, manager of the newly formed Miami Aero Corporation, reports excellent charter business with his five ships, and his newly organized Miami-Palm Beach hourly service is going over with a bang. Riddle is planning operations from West Palm Beach, Ft. Lauderdale, Tampa, and Miami, and states he will open an ultra modern flight school in the near future at some Florida point.

Panama City, Florida

By Gene Schwab

Aerial transit traffic at our municipal airport has increased considerably since the first of the year. During 1936 we had a total of 118 transient ships and during the first two months of this year we had 54 visiting ships.

Mr. J. B. Atkinson, formerly of this city and now residing in Montgomery, Alabama, has purchased a new Stinson Reliant and is a regular visitor to our community on week ends.

After three years of hard effort we have finally been able to convince our city that the road to our airport needs hard surfacing. This work was completed this month and it is possible now to drive to the airport from the heart of the city in about five minutes.

There are eleven students taking time at the airport. Two of them are ready to solo within the week. This will bring the number of solo students to seven. Prospects for quite a few new students are excellent and local passenger flying has increased considerably since the first of the month.

Pittsburg, Kansas

By Juanita Horn

Russell White recently purchased a Tank Waco from Byron McCartney. Russell also has purchased a private hangar from Bernice Batten. Russell's purchase has hummed up action a little. It takes several persons to open up the hangar every time he comes out to admire his plane.

Inspector Douglas also relicensed the Stinson on his visit here in February. Clayton Graves received his A. & E. and Don Blasor finished his transport test.

Don Blasor and his lady friend, Bessie Tatham, made a trip to Carthage in the Velie Monoprep recently to visit H. G. Harper. And neither of them wore the flying suits available here at the Atkinson port. That's what I'm wondering! Why?

In spare time the mechanics have been renovating the cockpits of the Travel Air preparing it for the coming passenger season.

San Antonio, Texas

By Greg Moore

The new field lighting equipment has been installed, and has been tested. From a central control board located in the tower of the new Administration Building the entire system can be operated. This consists of the newest type border lights, runway floods, large flood light in front of the loading apron, circle in the center of the field, and a neon lighted wind "T." The center circle is equipped with red and green lights to be used during night flying to regulate traffic. Also, the Department of Commerce beacon will be operated by remote control from this tower. This work has been done by the P. W. A. and is a big step in making this field one of the best in the Southwest.

This field had a rather important visitor the other day in the person of Col. Gustavo Leon, of the Mexican Air Force. Col. Leon took delivery of a Northrup Gamma which he intended to fly direct to Mexico City. The air line distance is about eight hundred miles, with several high mountains in between, but Col. Leon said that he intended to fly at about 1600 feet most of the way and expected to make the trip in less than four hours.

At this writing the local chapter of the N. A. A. are getting all set for their big air show on the 14th, and according to Fred Harmon, it should be worth seeing. They also plan to have a drawing for a new Taylor Cub, which will attract plenty of customers.

United Aero reports a new student, W. S. Haddon, who is an employee at the Post Office.

Kirby Bernhard of the San Antonio Buick has purchased a Travelair, and can be seen any sunshiney day putting in time.

Hangar Six reports several new students: Orin Mitchell, Robert Vinson, Gus Reingar, George Henderson, and Johnel Cope. Now that the flying weather has improved students are taking a more active interest.

Last week Hangar Six opened a downtown display room with a new Taylor Cub, Continental Motor, and several other pieces of flying equipment on display. It has attracted lots of attention and will probably do much to stimulate interest in flying. P. H. Hebert, public relations man for Hangar Six, is in charge.

Blanche Noyes of the Department of Commerce was in town early this month and made a talk before the local chapter of the N. A. A. which was very interesting. She told of the Bendix Race she won last fall, and of her work with the Department.

Shreveport, Lousiana

By Jack E. Myers

Barksdale Field, the world's largest airport, effective March 18th, is losing its commanding officer, Brig. Gen. Gerald C. Brant. The war department has ordered him to assume command of the second wing of the GHQ air force at Langley Field, Va. Gen. Brant, who has been in command of this field for the past two years, is well liked by those who know him, and we wish him the best of luck at his new post. He is being succeeded by Brig. Gen. Frederick L. Martin, who has been executive officer of the air corps material division at Wright Field, Dayton, Ohio.

Other transfers from this field are as follows: Lieut. Col. Louis C. Wilson, quartermaster, Maj. Wood S. Woolford, of the medical corps, Capt. Manning E. Tillery, and Lieut. Col. George E. Lovell, Jr., all being transferred to the Panama Canal department; and Lieut. Reuben C. Hood, Jr., to the Philippine Islands. Maj. Woolford has been stationed at this field longer than any officer here.

Maj. Gen. Frank M. Andrews, commander of the GHQ air force, and Maj. Clements McMullen, air force operators officer, were visitors on February 19th. They were on an inspection tour with March Field, California, as their destination.

Barksdale's attack and pursuit squadrons, which have been on winter tests in Michigan, have returned to their home port. The army's new sub-zero equipment was tested and found entirely satisfactory, according to General Brant. While the war birds expected to maneuver in temperatures far below zero, they were slightly disappointed in the fact that the Michigan thermometer never dropped even to the zero point. Major Lester J. Maitland was in command of this flight.

Fifty-three marine corps planes, carrying 54 officers and 79 enlisted men, soared in from the west on March 8th. They stopped here for lunch and to refuel. They were flying to Quantico, Virginia, from California by way of Maxwell Field, Alabama.

Many awed citizens of Shreveport gazed in wonderment from office windows on the afternoon of February 23rd at a mysterious flying creature that winged its way in from the west. Upon landing here, this dreadnaught of the air proved to be one of the army's machine-gun studded "flying fortresses," a huge four-motored Boeing bomber.

It made the trip here from March Field, Cal., a distance of approximately 1,800 miles, in one hop, taking only seven hours for the trip. This was the first in a series of about two planes of this type per week to come here until fourteen have arrived. This field, which expected these bombers to be stationed here until a distant date, was rather surprised when two days after the first plane arrived it soared into the air for a "local" flight. When high above the city, it turned its nose to the East and radioed down to Gen. Brant that it was winging its way to Ft. Bragg, N. C.

From the Municipal Airport, it is officially reported that the Delta Air Lines, serving this city, has purchased a new all-metal Lockheed Electra airliner. The speed of this plane shortens the time by half an hour between this city and Charleston, S. C. Of interest will be the news that Delta Air Lines reports an increase of 112 per cent in air travel for the months of January and February.

Selma, Alabama

By Earl Wheeler

Selma's airport is becoming quite active again with the opening of a flying school there this week. Houston Armstrong, who has purchased a new Taylor Cub, has enrolled the following students: Julien Lilienthal, George Mason, Jr., Chuck Eakens, Robert Moore, Joe Bush, Buck Mason, Walter Johnson, Miss Sallie Moore, James Kynard, Clay Berry. Others expect to start soon.

Armstrong began his flying career with Odell Garrison of Birmingham, who operated a flying service at Selma in 1930 and 1931. At that time he was the youngest licensed pilot in the state. Since then, he has flown a number of different type planes, having owned several himself. He successfully passed the examination for transport license at Birmingham Municipal Airport in 1935.

St. Louis, Mo.

By Howard Barman

Backed by a $65,000 guaranty fund, the St. Louis Air Race Association will on May 29, to 31 bring to St. Louis its first air races on a national scale since 1923. The $15,500 in prizes to be offered is larger than that of any other air meet, except the annual national air championship at Cleveland.

The newly organized Air Race Association has been incorporated by a group of prominent business men. George B. Logan, an attorney and chairman of the air board of the St. Louis Chamber of Commerce, is president of the association.

The first national aerobatics championship to determine the leading professional stunt flyers will be held during the three days of the race meeting.

James R. Ewing, who has directed air races at Seattle, Omaha, Tulsa and Denver, will manage the St. Louis meeting.

Facilities for from 15,000 to 20,000 spectators will be provided at the St. Louis Municipal-Lambert Airport. All of the races will be in view of the spectators, as they will be held over a five-mile course of three legs. The flyers will race in a group, not against time.

New radio equipment, including 25-watt receiver, 14-tube Breiting receiver, code instruction machine, cathode ray oscillograph, Universal AC bridge, all wave oscillator, public address system, frequency monitor and code oscillator have been purchased and installed in the radio building at Parks Air College for the use of students enrolled in the new aircraft communications course.

The course was recently established at the request of airline operators (TWA and Pan-American) who suggested training in aircraft communications which would qualify the student to take his Federal Communications Commission test for the radiophone operator's second class license and the radio-telegraph operator's third class license.

Two terms work in radio is offered during the Spring and Summer terms under the supervision of Charles J. Schwarz, M. S., E. E. Eighteen students are enrolled for the Spring and Summer terms.

Aircraft communications students are working all districts on the amateur radio band. The Parks College call letters are W9FZT portable. Of interest to amateur radio operators perhaps is the operation of the school's radio on the following bands: 160 meters, 1977 KC; 80 meters, 3954 KC; 40 meters, 7109 KC; 20 meters, 13218 KC, and 10 meters, 28436 KC.

The Robertson Aviation School, a division of the Robertson Aircraft Corporation, located on Lambert Field, announces a nine month radio course to be added to the curriculum. Joseph W. Wecker, Manager of the School, also announces the extension of the present six months airplane and airplane engine mechanics course to be extended to a nine months course. The six months night mechanic course will be extended to 12 months. The total enrollment of the school is 103 students.

The Robertson Aviation School's night mechanic students have organized a 12 piece orchestra, under the direction of Joseph A. Wright, Chief Instructor of the Ground School.

David Battle Smith and Kenneth Blank, students of the Robertson Aviation School, are now the proud possessors of brand new and shiny private licenses.

ANNOUNCING:

Government Approval of the "ZEPHYR" . . . $1295-$1355

Robert Cummings and his green Porterfield Airplane, "Spinach."

SEE THE PORTERFIELD WHEREVER YOU GO

★

Robert Cummings, Paramount star, the proud owner of a Model 70 Porterfield with 70 hp LeBlond engine, says:

"Since I received the Porterfield I have taught three people to fly it. One has soloed—my wife and another old friend are near that experience. Flying 'Spinach' is about as restful as anything I can imagine. I wish to compliment you and your entire organization on the amazing performance, dependability and economy of this big little aeroplane. You claimed a cruising speed of 105 — my ship cruises 110 at 1750 revs."
Robert Cummings is one of the many satisfied Porterfield owners.

Five models in these outstanding low-priced airplanes are available from $1,295 to $2,895. One-third down—twelve convenient payments.

PORTERFIELD AIRCRAFT CORPORATION

2467 Charlotte Street **Kansas City, Missouri**

Texarkana, Arkansas

By Jack Jackson

All the lights in our municipal airport are now in and are working fine. Let us know when you are coming in after dark and we will turn them on. The runways are now in excellent all-weather condition. Our 100 x 90 steel hangar is housing ten local ships, but we we always have room for visitors and free transportation to town. There is always a licensed mechanic on the field, day or night, ready to do any kind of work.

We are hoping to have American Airlines stopping here in a month or two.

Traffic business for 1935 totaled 240 ships or more, with a student business of about 40 soloes. In 1937 there were about 275 ships in, not including local planes.

Recent visitors include Mr. Everts in a Cessna with his own designed single bladed prop, which seemed to be all he says it is, Mr. Bob Walker, on his way to South Bend in a Waco cabin, Mr. Buck Carter flying the Lion Oil Co. Beechcraft. Mr. Morris in a Ryan ST stopped for fuel en route from Dallas to Nashville. Some of the dumb students and onlookers here think a three point landing is on the end of the prop, end of a wing, and part of the tail.

Tulsa, Oklahoma

By Frances Brown

Mrs. A. M. Alcorn of the Tulsa unit has been appointed Governor of the W. N. A. A. for eastern Oklahoma by the national board of directors at Denver. Mrs. Alcorn, formerly vice-president, has been active in the unit for three years. Her widespread acquaintance and interest in things aeronautical has been shared by her husband, the Department of Commerce inspector in this area.

Mrs. Alcorn's main duty will be to form units in various eastern Oklahoma cities. Each city may have one charter; ten women eligible to membership in the National Association are required to form a unit. Mrs. Alcorn will co-operate with Mrs. Moss Patterson of Oklahoma City, a fellow-governor. By her new position Mrs. Alcorn is entitled to vote in the National group.

Mr. and Mrs. Fritz Martin have sailed from New Orleans on a Panama cruise. The Martins, now living at Shreveport, are former Tulsans, both pilots, and own a Beechcraft.

The Tulsa Unit plans to raise their share of the National Scholarship Fund, sponsored jointly by the National Association and the 99'ers.

The Tulsa Unit's annual election provided the following new officers: President, Mrs. Gordon Wright; vice-president, Mrs. W. G. Green; secretary, Mrs. Rollin Gish; treasurer, Mrs. A. M. Horrall. Mrs. Wright is a charter member and has been active since the organization of the Unit in 1931. She has charm, poise, and executive ability and the unit regards her election as an auspicious beginning for future progress. Mrs. Green is expanding her aeronautical interests which were inspired by her husband, an officer in both the local NAA and in the Airmen's Club. Mrs. Green is being taught to fly by her husband in their Cessna cabin ship. Our new secretary, Mrs. Gish, is past vice-president, and she revealed herself to be such an active and tireless worker that she will undoubtedly make a most efficient secretary. She is the kind of member all clubs like to have—likeable, and capable of performing any duty that arises. The Gishes are long-time citizens of Oklahoma, Mr. Gish being a well-known attorney. Mrs. Horrall, our new treasurer, is the Unit's most active flying member and is to be found every fine day flying at Commercial Airport in the Horralls' Fairchild cabin. The Horralls, like the Greens, use their airplane for both pleasure and business.

Wichita, Kansas

By Creighton Merrell

Election of officers of the Wichita Aviation Club was carried out at the March meeting held at the Broadview Hotel. Horace Huntsbarger, sportsman pilot, was chosen to succeed Andy Swenson as president. Swenson has worked hard during his term and among his accomplishments is the sponsorship of the 1936 Kansas Air Tour. H. F. Brown, factory superintendent for Stearman Aircraft Co., was named first vice-president; Page Huston, sportsman pilot, was chosen for second vice-president; T. E. Jones will act as treasurer; and Charles Lander, widely known pilot, was appointed secretary.

The assemblage of officers should assure much real progress and activity for the coming year. First action will be that of soliciting additional club members and later the club will branch out in sponsoring model airplane building and flying in this locality. Tentative plans call for another Kansas Air Tour this year and air show sometime this Spring.

Cessna Aircraft Company plans to exhibit a new C-37 monoplane at the Pacific Aircraft & Boat Show and will have at least two airplanes on the field for demonstration flights. Art Whittaker and Henry von Berg, California dealers for Cessna, will be on hand to assist Dwane Wallace, president of Cessna Aircraft Company, who will be at the show.

At the present time Cessna is turning out about six planes per month but plans to increase this considerably. Additional men and machinery will be acquired and constantly increasing sales will mean that Cessna will greatly exceed last year's business in 1937. Work since the New York show has been concentrated largely on attempting to supply the heavy demand of dealers for the new model.

A shortage of hangar space is daily making itself more keenly felt in Wichita. Beech and Cessna are finding it necessary to use space themselves that has been formerly rented to plane owners. Need for more room for final assembly and for storage of trade-ins is the reason. The municipal hangar is practically entirely taken and that leaves no other available space in the city.

Recent distinguished visitors to the Stearman Aircraft Company were Brig. Gen. H. H. Arnold and Col. S. W. Fitzgerald of Washington, D. C. The two officers each piloted their airplanes to Wichita on an inspection trip that will take them to every military aviation factory in the country. They spent the week-end looking over the factory and were guests at a dinner given at the home of J. Earl Schaefer, president of Stearman.

While here General Arnold announced that the army is increasing its force of fighting aircraft at the rate of 524 units a year and lauded the work of the various airplane concerns of the nation in their work to advance aviation in this country in cooperation with the army air corps.

Flight tests were recently completed at Wichita on the Beechcraft Model 18 transport with Jack Thornburg of Kansas City at the controls. The craft has an exceptional performance and very high cruising speed. As result of the flight tests the airplane was awarded an A. T. C. certificate. Thornburg is a TWA pilot who came to make the tests on leave.

The Bill Vacin Flying Service at the municipal airport has acquired a Kinner powered sport Travel-Air formerly owned by Frank Bible, sportsman pilot. The airplane will supplant the Velie powered Monocoupe used in the past for flight instruction and solo time. The new airplane will permit advanced instruction in acrobatics and the like and will satify those who prefer to fly an open airplane.

Visitors to the administration building at the municipal airport are admiring the large wall map placed in the hallway outside of the weather office. This map was constructed by Preston Kirk, flying operator on the airport. On it fliers can conveniently determine the distance and course between various cities in the United States.—Alanson Rawdon has purchased a Taylor Cub for the purpose of forming a flying club among Stearman Aircraft employees.—Wichita has proved one of the marryingest towns along the line for TWA male personnel. Four handsome stalwarts have taken the count to date and the last to take a life time reservation is no less than Hal White, local passenger agent, who is well known in the deep south.

West Palm Beach, Florida

By Art Keil

Development of Morrison Field, opened here in December, as a winter training center and haven for privately owned planes, is proceeding rapidly. Construction of one hangar has already started and another is scheduled to begin shortly, while the taxi-strip is being enlarged to double its original size.

Palm Beach Aero Corporation, operating a shuttle line between West Palm Beach and Miami on an hourly schedule, is now building a $35,000 hangar of concrete and steel on ground leased for five years. The building will be approximately 100 by 120 feet on a 200-foot square tract adjoining the taxi strip. Although scheduled to be complete March 1, construction was delayed by the Ohio flood which prevented shipment of steel for several weeks.

Service will include a flying school, repairs, and both land and amphibian ships for charter. J. Wesley Pape of Fort Lauderdale is president, and John P. Riddle, vice-president and manager.

Lease of 100 feet has been requested by W. R. Lemon Flying service for construction of a modern hangar. The service now has 78 students. Among the instructors is Mrs. Dorothy Brink, one of the nation's few women teachers and one of the comparatively few women of the country holding transport licenses.

Eastern Air Lines has just installed the first small radio set of its kind to combine all three frequencies—station to ship, station to station and night frequency—at their Morrison Field office. Officials said similar units may be installed along the line.

James L. Turnage, former WPA supervisor, has been appointed manager of Morrison field.

New use for a seaplane was found here recently when Scenic Airways, for lack of a tugboat, hooked a Commuter to a barge for a two-mile trip up Lake Worth. During the journey C. J. Stohler, Jr., aboard the barge, slipped and fell into the lake, and was knocked unscious as he fell. Pilot Krumbhaan Herdon dove through a window of the plane, located Stohler several feet beneath the surface and pulled him back to the barge where he was revived after several minutes of artificial respiration.

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AIRPLANES AND ENGINES FOR SALE

STINSON RELIANT SR-5, 225 Lycoming. Complete instruments including rate of climb, turn and bank, also landing lights, and upper engine lubricating unit. Interior like new. Covering in excellent condition. Large gas tanks. Ship priced for quick sale. Beech Aircraft Corporation, Wichita, Kansas.

CESSNA C-34. 300 hours total. No time since overhaul. Electric starter, generator, licensed until April, 1938. The best buy of the month. Air Sales, Inc., Ledger Bldg., Fort Worth, Texas.

FOR SALE: Waco 10, never cracked; new cover on fuselage, priced for quick sale. Lincoln Page 0XX6 a dandy with original cover. Never damaged. American Eagle Model 201. Kinner K-5 steel prop, brakes, Bank & Turn, other extras. Will take new or good used cars in trade. Also have two model A Hisso motors, new 0X5 in original crate, one overhauled 0X5, parts for A-70 Continental. Blosser Motor Company, Concordia, Kansas.

CESSNA 1936, Model S50 Warner 145 h. p. Time on ship only 70 hours. Time on engine 2 hours, 30 minutes. Extra equipment includes generator, voltmeter, ammeter, instrument lights, 52½ gallon gas capacity and wiring for landing lights and flares. Will sacrifice for cash. Beech Aircraft Corporation, Wichita, Kansas.

FOR SALE: Warner Fleet, A-1 condition, ten hours since last motor overhaul and complete new cover job. Many extras, write for particulars. Blackwell Flying Service, Palestine, Texas.

FOR SALE: Curtiss Robin. A-1 condition. Licensed. Twenty-five hours since new rings and valves. Just re-finished blue and silver. Priced to sell quick. H. H. Roby, 355 No. Kansas, Wichita, Kansas.

FOR SALE: STINSON JR., SR four-place, 215 h. p. Lycoming. Standard instruments. Covering and upholstery in fair condition. Licensed to August 15, 1937. This is really a bargain. Beech Aircraft Corporation, Wichita, Kansas.

FOR SALE OR TRADE: Ryan B-5, licensed to November 1, 1937. Speed Ring, electric starter, 950 x 12 semi-airwheels, good set of instruments. Ship in excellent shape. For sale cheap or will trade for equipment suitable for dusting. Jess Bristow, Meacham Field, Fort Worth, Texas.

WACO C Bargain, '33 model ambulance, pink of condition, $2875. Late '36 Aeroncas $950 to $1390. United Aero Corporation, Box 222, San Antonio, Texas. South Texas Distributors for Aeronca.

STINSON Tri-Motor Model U in A-1 condtion. Equipped with public address system of unusual power and quality. This outfit has unlimited possibilities as money maker for the right party. Present owner has other interests. Will sell or trade. Box 992, Austin, Texas.

A REAL BARGAIN: 420 h. p. BEECHCRAFT, 202 mph cruising. Fabric and upholstery in good condition. Extras: Landing lights, flares, puncture proof tires, radio transmitter and receiver, T-type control column and 120 gallon gas capacity. Priced reasonably. Beech Aircraft Company, Wichita, Kansas.

FOR SALE

1936 Ranger powered Fairchild 24 demonstrator, guaranteed perfect. Only 120 hours. Bargain for quick sale.

1934 Wright powered deluxe Waco Cabin. Completely recovered, refinished and majored. Many extras and full of night flying equipment. Price on request.

1935 Warner powered Fairchild 24. Radio receiver, bank and turn, generator, and in excellent condtion $2950.

Late 1935 Warner powered Fairchild 24, all yellow. Bank and turn, rate of climb. Guaranteed perfect. Bargain for cash.

Three-place OX TravelAir, good shape, steel prop. $450.00.

Three-place Warner powered Ranger airplane. Excellent condition, $750.00.

CALLING ALL DEALERS!

Exceptional opportunity on TAYLORCRAFT dealerships.

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MISCELLANEOUS EQUIPMENT FOR SALE

FOR SALE: New Wright J5, J6, Szekley, Challenger Gipsy, OX5 motor parts. Robin, Moth cowling. Plane parts: wings for Robin, Eagle, Eaglerock, Waco, Travelair, Fledgling, Aeromarine; wheels, tires, controls, dope, Pioneer instruments. Warner, Cirrus propellers. List free. Northrop Aeroplane Company, Minneapolis, Minnesota.

Have good used Irving quick connector lap pack and Switlik seat pack for sale. All models of used chutes available in various price ranges. Packing and repair of chutes a specialty. Merrell Parachute Sales & Service, 625 North Topeka, Wichita, Kansas.

BEST BARGAINS IN USED AIRPLANES

LOCKHEED VEGA: Model 5C. Lemon yellow, black trim. New upholstery. 70 hours since new half shell and front ring installed. 144 gallon tanks. Radio, Sperry Gyro, all other instruments, flares, landing lights. Total time since major 183.3 hrs. Repainted 20 hours back.

STINSON RELIANT: Model SR 5A. 245 Lycoming, controllable prop, 540 total time on motor, 42 hours since major. Leather upholstery, 75 gallon gas tanks, flaps, radio and complete instruments.

CESSNA C-34: Warner 145. Total time less than 200 hours. Plenty of extras; airplane less than six months old.

STINSON SM-8A, 215 Lycoming. No time since major. All flight and engine instruments, balloon tires. Painted black, trimmed in white.

WACO F-3: 225 Jacobs, 3 place, open dual controls, complete set blind flying instruments, Westport Radio, special rear cockpit enclosure, front cockpit cover. Total time 530 hours. Completely gone over, control cables new, motor has no time since major, licensed to February '38. Cactus proof tubes, Scintilla Magnetos.

FAIRCHILD: 24-C8-C Warner 145 h. p. Three place cabin, generator, radio, airspeed, turn and bank, rate of climb, black trimmed in red. Duals, wheel pants, lights, total time 750 hours; less than 50 hours since major. Fabric and paint are good; license expires February, 1938.

P. F. (POP) HOTCHKISS

AIRPLANE EXCHANGE AND BROKERAGE

MUNICIPAL AIRPORT FORT WORTH TEXAS

PILOTS EXAMINATION questions made easy. Send for up-to-date Quiz System, giving questions and answers on aircraft, engines, meteorology, navigation and Dept. of Commerce regulations. Prepare yourself to pass. Mailed postpaid for $2.00. Address Quiz System, 321 Griesheim Bldg., Bloomington, Illinois.

EMPLOYMENT

WANTED: Several young men to exchange labor for flight training. Need no previous flying experience. Board and room furnished. No money whatever needed and those worthy may obtain Transport rating if desired. Details and reference furnished applicants on request. Box 548, Belleville, Kansas.

Licensed A and E Mechanic. Six years experience. Best of references. Want connections with airport or private operator. Box 203, Southern Flight, Ledger Bldg., Fort Worth, Texas.

EXPERIENCED transport pilot, speaks Spanish, plenty of night flying and cross-country experience in United States and Latin American countries, desires flying position with individual or commercial operator. Excellent references furnished. Box 205, c/o SOUTHERN FLIGHT, Ledger Building, Fort Worth, Texas.

NOTICE!

SPECIAL OFFER

-Transport Flying Course-

Position As Assistant Airport Manager

A good used $3,000 airplane, gasoline and passenger concession on largest commercial airport in the State. We can make this offer to only one reliable party. Applicant must furnish very best reference. $1500 necessary to accept this offer.

IN CENTRAL SOUTHERN STATE

Reply to Box 215, Southern Flight, Ledger Bldg., Fort Worth, Texas

Maps From On High

(Continued from Page 7)

high altitude work as the temperature varies from zero degrees to twenty degrees below zero at all times. Most mapping is done at an altitude of from 13,000 to 20,000 feet above the earth. Heat in the cabin is not desirable due to the frost which collects on the camera as a result of the extremely cold outside air.

The scale of the finished map depends upon the altitude the mapping plane is flown. For instance, if a Fairchild K3-B camera is used the focal length is eight and one-half inches. If the scale of the map is to be one inch to 2,000 feet, the altitude is obtained by multiplying 2,000 by the focal length which tells us that the airplane must be flown at an altitude of 17,000 feet. Naturally this figure is taken above the earth and is not height above sea level. If the terrain varies in altitude the mapping plane must also vary its level so that the same predetermined altitude is maintained over all sections of the ground.

The mapping is done by making a series of strips of pictures and these strips are practically always flown in a north-south or east-west direction. Each successive strip over-laps the previous one by thirty-five per cent while each picture in a strip over-laps the previous one by sixty per cent. It is the job of the cameraman to check the timing of the shutter to insure sufficient overlap, to keep the cameras level, and to properly rotate the camera to compensate for crabbing the airplane to overcome wind drift. Usually a mapping flight lasts from four to five and one-half hours which constitutes a day's work except for several additional hours spent re-loading the camera with film, checking the airplane, and other miscellaneous duties. Good mapping weather so seldom occurs that everything must be kept in complete readiness for action at all times.

To date the state of Arizona has provided the best mapping weather with an average of ten operating days per month. Other localities are not so good.

Fully half of the success of aerial mapping depends on the skill and experience of the pilot. If the man at the stick handles his controls sharply and kicks the plane violently in first one direction and then another, the cameraman is unable to keep the camera level or adjusted for drift. The rule is to use the controls sparingly and without haste. If a wing goes down the airplane may not be leveled for several moments and the camera can be adjusted to compensate for the slow rolling of the airplane. The rudder must be used with good judgment to avoid turning the nose more than the maximum permissable two and one-half degrees from the course.

After the mapping is completed the film is immediately sent to the laboratories for developing and checking. The pilot and cameraman wait until this is completed and the work given an o. k. before proceeding to the next job. This procedure is taken to insure against error in filming that might have to be done over.

So important is the work of the laboratory technicians that a great portion of the resources is invested in this item. Of special note in the Fairchild laboratories is the multiple lens transformer, the only one of its kind in the world. It is used to transform the pictures taken by multiple lens camera into one single picture. Equally important is the multiple lens stereoscopic plotting machine used for the very special work of contour mapping. There is also a department where the work of blending the separate pictures is done before making the final reproduction.

Unfamiliar to many is the recent, startling success in contour mapping from the air. This branch of aerial photography has been developed to the point where it is being widely adapted on many big projects. Although it might seem imposisble to determine elevations on the ground from pictures taken above, this is exactly the accomplishment of contour mapping. In this type of mapping the photos are shot from a lower altitude and have a larger scale than mosaics. The accuracy of the work compares favorably with that achieved by plane table surveying.

Thus it is that aerial photography has widened its scope and application in the last few years to an extent that makes it a stern competitor of old and established methods of surveying and mapping. The huge government projects, particularly those now in progress in the south and southwest for flood and erosion control, coupled with the many new uses constantly being found for the art by private industry, definitely guarantees a brilliant future for this progressive and healthy branch of the aviation family.

W. N. A. A. in the Southwest

(Continued from Page 13)

Una Goodwin, Mrs. Pressler and Miss Hazel Simpson of Oklahoma City; Mrs. Dorothy Edgar, Beaumont; Mrs. Fanny Leonpacher, Lafayette, La.; Mrs. Malcolm Clarke, Guthrie, Okla., and Miss Gerry Honomichl and Mrs. Jean LaRene Foote of Dallas. Mrs. Clarke and Miss Goodwin came in by air Saturday morning.

Mr. and Mrs. Moss Patterson, also honor guests at the dance, flew in Saturday. He is president of the Oklahoma City chapter, N. A. A., and she is president of the Oklahoma City unit, W. N. A. A., and State governor of that organization. Other out-of-city guests included Frank Hover, Herbert Howell and Mr. and Mrs. Tom Cooper, Oklahoma City; Merrill Morgan, Tulsa, and George Haddaway, Fort Worth.

Planning the dance, which was featured by an impromptu floor show by members of the local fraternity, were Mrs. A. H. Anderson, Texas State governor of W. N. A. A.; Mrs. Carlotta Marshall, Mrs. Ben Branson and Mrs. Cliff Pettit.

The Tulsa Unit, organized in '31, is one of the Association's older units, and its invitation to the National Association is supported by the Tulsa Chamber of Commerce, Tulsa Airmen's Club, Women's Auxiliary to the Airmen's Club, the local chapter of the National Aeronautical Association, and many local individuals interested in aviation. All aviation enthusiasts in the Southwest are invited to participate in the social features of the convention and to join in extending Southwestern hospitality to visitors from far away. The Tulsa Unit particularly invites all women interested in aviation in the Southwest to come to this Annual Convention, and hopes that many from surrounding cities—Bartlesville, Pawhuska, Enid, Okmulgee, Miami, and other towns—will be in large attendance.

Air Transport Figures

According to the Bureau of Air Commerce, domestic airlines carried 1,147,969 passengers during 1936, together with 8,350,010 pounds of express. Only 860,761 passengers and 5,511,737 pounds of express were carried in 1935.

At the end of 1936 there were 380 airplanes in scheduled airline operation and 9,972 persons were employed. Miles flown in 1936 totaled 73,303,836, or approximately ten million more than were flown in 1935. During the last six months of last year the airlines flew 15,000,000 miles per passenger fatality.

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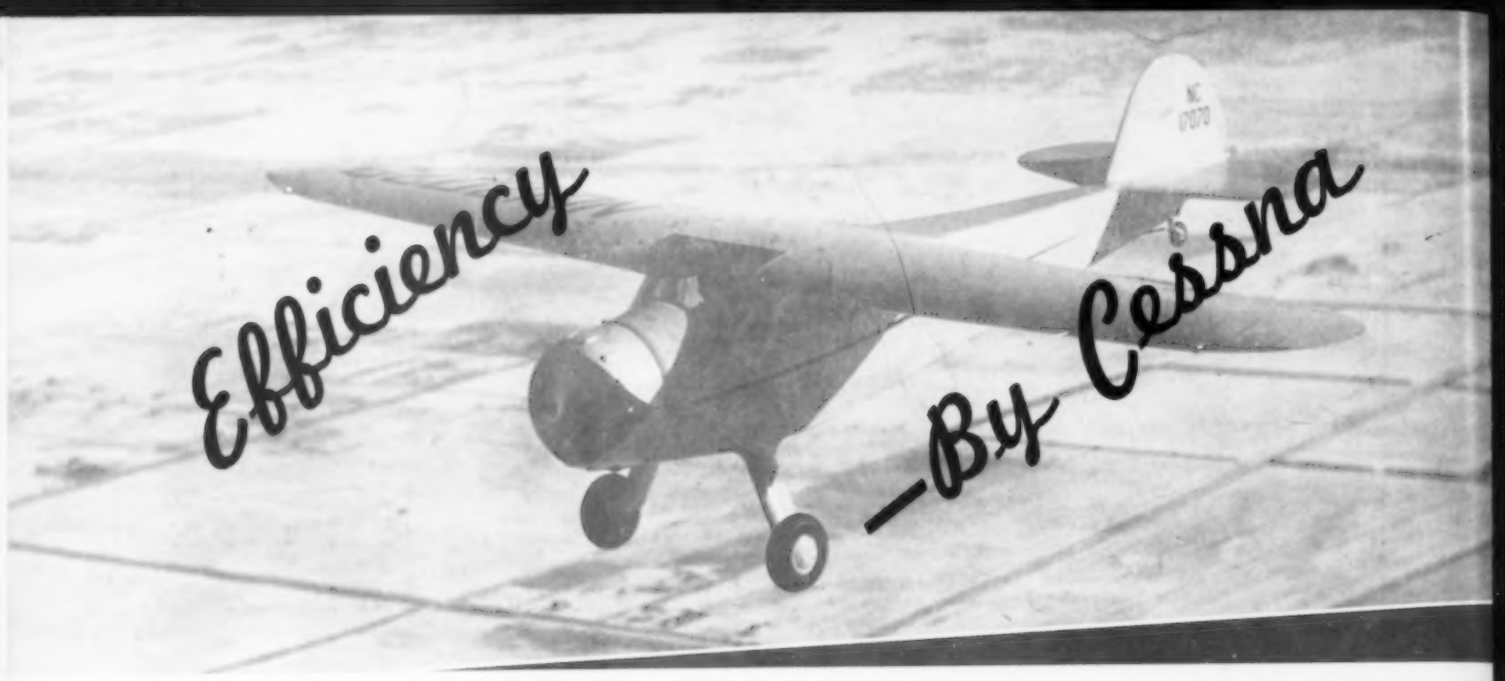

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